

**DATA EVALUATION RECORD
CHRONIC TOXICITY TEST WITH THE ADULT HONEYBEE
Non-Guideline Feeding Study**

1. **CHEMICAL:** Mesotrione **PC Code:** 122990
2. **TEST MATERIAL:** Mesotrione SC (ai: mesotrione) **Purity:** 9.09% w/w
3. **CITATION:**
Author: K. Kleebaum
Title: Mesotrione SC (A12739A) - Chronic Toxicity to the Honeybee *Apis mellifera* L. in a 10 Day Continuous Laboratory Feeding Study
- Study Completion Date: December 5, 2013
- Laboratory: BioChem agrar
Labor für biologische und chemische Analytik GmbH
Gerichshain, Germany
- Sponsor: Syngenta Ltd., Jealott's Hill International Research Centre
Bracknell, Berkshire, UK
- Laboratory Report ID: 13 10 48 074 B
- DP Barcode: 437905
- MRID: 49822704
4. **REVIEWED BY:** Rebecca L. Bryan, Staff Scientist, CDM/CSS-Dynamac JV
Signature: *Rebecca L. Bryan* **Date:** 10/19/2017
- APPROVED BY:** Elizabeth Krupka, Environmental Scientist, CDM/CSS-Dynamac JV
Signature: *Elizabeth Krupka* **Date:** 11/30/2017
5. **REVIEWED BY:** Michael Lowit, Ph.D., Senior Scientist, EPA/OCSPP/OPP/EFED
Signature: *Michael Lowit* **Date:** 10-2-2020

6. STUDY PARAMETERS

Age of Test Organisms at Test Initiation: Young female worker bees (2-3 days old)

Exposure Duration: 10 days

7. CONCLUSIONS

The honeybee, *Apis mellifera*, was exposed to Mesotrione SC (ai: mesotrione, 9.09% w/w purity) for 10 days in a feeding study at nominal concentrations of 161, 321, 642, 1,284, and 2,569 mg ai/kg diet. The corresponding mean daily dietary doses were 4.8, 8.1, 14.9, 32.6, and 113 µg ai/bee/day.

After 10 days, mortality was 1.7, 6.7, 30, 83.3, and 100% in the nominal 161, 321, 642, 1,284, and 2,569 mg ai/kg diet groups, respectively, compared to 0% negative control mortality. In the ≥321 mg ai/kg diet groups, mortality was significantly greater than the control and behavioral abnormalities of moribund and uncoordinated bees were observed.

Based on the nominal dietary concentrations, the 10-day LC₅₀ (95% CI) was 768 (628-940) mg ai/kg diet and the NOAEC was 161 mg ai/kg diet. Based on the mean daily dietary dose, the 10-day LD₅₀ (95% CI) was 19.2 (17.0-22.0) µg ai/bee/day. Results based on the formulated product are also included in the tables below.

Active Ingredient

Endpoint	Dietary Concentration (mg ai/kg diet)	Dietary Dose (µg ai/bee/day)
Mortality	LC ₅₀ = 768 (628 – 940) Slope: 4.11 (2.82-5.41) NOAEC = 161 LOAEC = 321	LD ₅₀ = 19.2 (17.0 – 22.0) Slope: 3.99 (3.16-4.81) NOAEL = 4.8 LOAEL = 8.1
Food Consumption	IC ₅₀ : Not calculable Slope: N/A NOAEC ≤ 161 LOAEC < 161	ID ₅₀ : Not calculable Slope: N/A NOAEL ≤ 4.8 LOAEL < 4.8

Formulated Product

Endpoint	Dietary Concentration (mg formulation/kg diet)	Dietary Dose (µg formulation/bee/day)
Mortality	LC ₅₀ = 8449 (6909-10340) Slope: 4.113 (2.82-5.405) NOAEC = 1771 LOAEC = 3531	LD ₅₀ = 211 (187-242) Slope: 3.99 (3.16-4.81) NOAEL = 53 LOAEL = 89
Food Consumption	IC ₅₀ : Not calculable Slope: N/A NOAEC ≤ 1771 LOAEC < 1771	ID ₅₀ : Not calculable Slope: N/A NOAEL ≤ 53 LOAEL < 53

This study is scientifically sound and is classified as **Supplemental** because test material (i.e., mesotrione) concentrations were not measured in the stock solution or the dietary matrix and a NOAEC/L was not established for food consumption. The results of this study can be used qualitatively for risk assessment.

TGAI testing is preferred for the adult acute oral toxicity study but formulation studies can be used to supplement TGAI data (USEPA, 2014).

8. GUIDANCE DEVIATIONS

This study was designed to comply with the following internationally accepted methods: Decourty et al. (2005), Suchail et al. (2001) and AFPP method CEB No. 230 (2010).

Although there are no specific U.S. EPA OCSPP guidelines available for this test, the reviewer assessed the study in accordance OECD Guideline No. 245 (2017).

The following deviations and deficiencies were noted:

1. A non-GLP preliminary range-finding test was conducted prior to definitive exposure, but its results were not discussed in the report. OECD Draft Guidance recommends a range-finding test be performed and the methods and results be reported.
2. The physicochemical properties of the test substance were not reported.
3. A TEP was tested but TGAI testing is preferred.
4. Analytical verification of the stock solutions and diet was not performed. OECD guidance at a minimum requires that the stock solution concentrations be verified. EPA also has an expectation about verification of test concentrations (USEPA, 2018).

The lack of analytical confirmation of test material concentrations impacts the acceptability of this study.

9. MATERIALS AND METHODS

A. Test Material

Test Material:	Mesotrione SC (suspension concentrate)
Description:	Yellow brown suspension
Lot No./Batch No.:	SAV1K00058
Purity:	9.09% w/w (99.5 g/L)

Stability of compound under test**conditions:**

Stable under standard conditions.

Storage conditions of test

< 30°C

chemical:**Physicochemical properties of Mesotrione SC**

Parameter	Values	Comments
Molecular Weight	Not reported	
Water solubility at 20°C (mg/L)	Not reported	
Vapor pressure (torr, at 25°C)	Not reported	
Structure	Not reported	
Mean organic carbon partition coefficient K_{oc} (L/kg _{oc})	Not reported	
Log octanol-water partition coefficient Log K_{ow}	Not reported	

Range finding test: Yes, definitive doses were based on a non-GLP range-finding test (results not reported).

B. Test Organisms

Guideline Criteria	Reported Information
Species Honeybee (<i>Apis mellifera L.</i>)	Honeybee (<i>Apis mellifera L. subspecies carnica P.</i>)
Age at beginning of test Worker bees of uniform age.	Young female worker bees (2-3 days old)
Source	Colonies were purchased from Bienenfarm Kern GmbH (Leipzig, Germany).
Were bees from diseased-free colonies?	Yes, all larvae used in the test came from a healthy, disease free, and queen-right bee colony. The larvae were taken from a hive that had not received treatments with chemical substances for at least one month.
Were bees kept in conditions conforming to proper cultural	Not reported

Guideline Criteria	Reported Information
practices?	
Acclimation conditions	<p>On Day -3, brood combs with capped cells were taken from different outside colonies. These frames were placed without adult worker bees in a "five comb brood body" and were incubated at 33 ± 2 °C and relative humidity of 70 ± 10 % in darkness for a maximum period about 24 hours (until Day -2). Afterwards, the newly hatched worker bees were transferred into the test cages in groups of 20 bees/cage. For the following two days (until Day 0), bees were held in the test cages at 33 ± 2 °C and 50-70% RH and provided with sugar solution and pollen food. Moribund and dead bees were rejected and replaced by healthy bees before starting the test.</p>

C. Test System

Guideline Criteria	Reported Information
Test Chambers	Aluminum cages (20 cm width x 15 cm height x 10 cm depth) with holes in the lateral walls and glass plates at front and back sides
Temperature during exposure	33-35°C
Relative humidity during exposure	57-63%
Lighting	Constant darkness (diffuse artificial light only during handling and assessments)
Feeding	50% (w/v) sucrose solution

D. Test Design

Guideline Criteria	Reported Information
Nominal application rates The test material should be applied at the maximum proposed label rate.	161, 321, 642, 1,284, and 2,569 mg ai/kg diet (corresponding to daily doses of 4.8, 8.1, 14.9, 32.6, and 113 µg ai/bee/day)
Dose Preparation	Test feeding solutions in 50% w/v aqueous sucrose were prepared daily just prior to administration of food.
Number of bees exposed	Three replicates with 20 bees per control and treatment group replicates for a total of 60 bees per control and treatment group.
Application methods	The freshly prepared test sucrose feeding solutions were provided daily <i>ad libitum</i> to bees in plastic syringes. During fresh food replacement, bees were left without food for less than 30 minutes per day on average.
Other experimental design information	The daily dose rates (administered solution) were based on a theoretical oral consumption of 33 µL per bee and day. The actual consumption was determined by reweighing the syringe containing the remaining test solution each day after removal from the test units. Any unconsumed food was rejected.
Were bees randomly or impartially assigned to test groups?	Yes
Controls	Negative control: untreated 50% (w/v) aqueous sucrose solution
Exposure period	

Guideline Criteria	Reported Information
24 hours	10 days
<u>Positive Control</u>	The reference item, Dimethoate EC 400, was tested at 111, 186, 309, and 516 mg ai/kg diet (actual consumption of 3.9, 7.1, 9.6, and 14.1 ng ai/bee/day).

10. REPORTED RESULTS

Guideline Criteria	Reported Information
Quality assurance and GLP compliance statements were included in the report?	Yes, study conducted in compliance with German Chemical Act GLP and OECD GLP (accepted by U.S. EPA).
Control mortality	0% negative control mortality
Were raw data included?	Yes
Were signs of toxicity described?	Yes, uncoordinated moving or moribund bees were observed.

Mortality and Observations

Nominal Test Concentrations (mg ai/kg diet) ^a	Number Exposed	Mortality at 10 days (%) ^b	Behavioral Abnormalities (%)	
Negative Control	60	0.0	None	
Mesotrione SC	161	60	1.7	
	321	60	6.7	
	642	60	30.0*	1.9% moribund on Day 5; 3.9% uncoordinated on Day 7
	1,284	60	83.3*	3.3% moribund on Day 1; 2.2% moribund on Day 4; 4.9% moribund and uncoordinated on Day 5; 9.1% uncoordinated on Day 7
	2,569	60	100.0*	1.8% uncoordinated on Day 1; 9.1% moribund and uncoordinated on Day 2
Positive Control, Dimethoate EC 400	111	60	0.0	None
	186	60	3.3	None
	309	60	8.3	None
	516	60	45.0	None

a Nominal test concentrations correspond to actual consumed doses of 4.8, 8.1, 14.9, 32.6, and 113.4 µg ai/bee/day for Mesotrione SC.

b Data were obtained from Tables 2 on page 23 and Appendices 3-4 on pages 37-40 of the study report.

* Significant difference compared to the control (Fisher's Exact Binomial Test with Bonferroni Correction; $\alpha=0.05$).

After 10 days, mortality was 1.7, 6.7, 30, 83.3, and 100% in the nominal 161, 321, 642, 1,284, and 2,569 mg ai/kg diet groups, respectively, compared to 0% negative control mortality. Mortality was significantly greater ($p \leq 0.05$) in the ≥ 642 mg ai/kg diet groups compared to the control. The observed behavioral abnormalities included moribund and uncoordinated bees in the ≥ 642 mg ai/kg diet groups. The 10-day LC₅₀ (95% CI) was 768 (574-1,028) mg ai/kg diet and the NOAEC was 321 mg ai/kg diet.

The overall mean daily dose consumption was 36.1, 30.0, 25.3, 23.2, 25.4, and 44.1 mg/bee/day in the control and nominal 161, 321, 642, 1,284, and 2,569 mg ai/kg diet groups, respectively. The accumulated daily doses over 10 test days were 4.8, 8.1, 14.9, 32.6, and 113.4 µg ai/bee/day in the nominal 161, 321, 642, 1,284, and 2,569 mg ai/kg diet groups, respectively. Based on the mean daily dose, the 10-day LD₅₀ (95% CI) was 19.2 (16.9-21.8) µg ai/bee/day.

Mortality data were statistically analyzed using Fisher's Exact Test with Bonferroni-Holms correction (one-sided, p≤0.05) to determine 10-day NOEC (No Observed Effect Concentration) value based on significant difference. The 10-day LC₅₀ and LD₅₀ values with 95% confidence limits were determined by probit analysis using linear maximum likelihood regression. The data were statistically analyzed using ToxRat professional software (version 2.10.06).

Reviewer's Statistical Verification

The reviewer analyzed the mortality and food consumption data using CETIS statistical software version 1.9.2.8 with database backend settings implemented by EFED on 7/25/2017.

The dietary concentrations (mg ai/kg diet) and dietary doses (µg ai/bee/day) expressed as the active ingredient and formulated product were used for the analyses, and are represented in CETIS as four separate test records (acronyms "dc" = dietary concentration, "dd" = dietary dose, "fm" = formulated product, and "ai" = active ingredient).

The data were tested for normality and homogeneity of variance using Shapiro-Wilk's test and Bartlett's or Levene's tests, respectively. The mortality and food consumption data were non-normal and heteroscedastic and were therefore analyzed using ANOVA followed by the Mann-Whitney U Two-Sample and Jonckheere-Terpstra tests.

The LC/LD₅₀ values for mortality was determined using linear regression. All analyses were conducted at α = 0.05 unless specified otherwise.

Active Ingredient

Endpoint	Dietary Concentration (mg ai/kg diet)	Dietary Dose (µg ai/bee/day)
Mortality	LC ₅₀ = 768 (628 – 940) Slope: 4.11 (2.82-5.41) NOAEC = 161 LOAEC = 321	LD ₅₀ = 19.2 (17.0 – 22.0) Slope: 3.99 (3.16-4.81) NOAEL = 4.8 LOAEL = 8.1
Food Consumption	IC ₅₀ : Not calculable Slope: N/A NOAEC ≤ 161 LOAEC < 161	ID ₅₀ : Not calculable Slope: N/A NOAEL ≤ 4.8 LOAEL < 4.8

Formulated Product

Endpoint	Dietary Concentration (mg formulation/kg diet)	Dietary Dose (µg formulation/bee/day)
Mortality	LC ₅₀ = 8449 (6909-10340) Slope: 4.113 (2.82-5.405) NOAEC = 1771 LOAEC = 3531	LD ₅₀ = 211 (187-242) Slope: 3.99 (3.16-4.81) NOAEL = 53 LOAEL = 89
Food Consumption	IC ₅₀ : Not calculable Slope: N/A NOAEC ≤ 1771 LOAEC < 1771	ID ₅₀ : Not calculable Slope: N/A NOAEL ≤ 53 LOAEL < 53

11. REVIEWER'S COMMENTS

The reviewer's NOAEC for mortality was more conservative than the value obtained by the study author, but the LC₅₀ and LD₅₀ values based on the concentrations of the active ingredient were in complete agreement. The reviewer's results included analyses based on the formulation, whereas the study author only reported toxicity values on the basis of the active ingredient. Additionally, the reviewer analyzed food consumption whereas the study author did not. The reviewer's results are reported in the Executive Summary of this DER.

For the reference control, Dimethoate EC 400, bee mortality was 0.0, 3.3, 8.3, and 45.0% in the nominal 111, 186, 309, and 516 mg ai/kg diet groups, respectively. The reference LC₅₀ (95% CI) was 570 (474-686) mg ai/kg diet and the LD₅₀ (95% CI) was 15.0 (13.1-17.1) ng ai/bee/day.

The OECD Acceptability Criteria was met for control mortality. The positive control performance was slightly less than recommended (45% mortality at 10 days instead of ≥ 50%) but was deemed sufficient.

The experimental dates of this test were September 11-21, 2013.

12. REFERENCES

AFPP Method No. 230 (2010): Evaluation of effects of plant protection products on *Apis mellifera* L. (French Association for Plant Protection: Guideline for chronic toxicity testing)

Decourtye, A. et al. (2005): Comparative sublethal toxicity of nine pesticides on olfactory learning performances of the honeybee *Apis mellifera*.

DP Barcode 437905

MRID 49822704

Suchail, S. et al. (2001): Discrepancy between acute and chronic toxicity induced by imidacloprid and its metabolites in *Apis mellifera*.

USEPA, 2014. Guidance for Assessing Pesticide Risks to Bees. Office of Pesticide Programs

USEPA, 2018. Honeybee Toxicity Testing Frequently Asked Questions – August 16, 2018.
Office of Pesticide Programs

CETIS Analytical Report

Report Date: 01 Dec-17 02:00 (p 1 of 8)
Test Code: 49822704 dc ai | 20-9566-0854

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 12-1652-9516	Endpoint: 10-Day Mortality Rate	CETIS Version: CETISv1.9.2
Analyzed: 01 Dec-17 1:55	Analysis: Nonparametric-Two Sample	Official Results: Yes
Batch ID: 08-0484-2561	Test Type: 2014 Honeybee Adult Chron Oral	Analyst:
Start Date: 11 Sep-13	Protocol: Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent: 50% w/v sucrose solution
Ending Date: 21 Sep-13	Species: Apis mellifera	Brine:
Duration: 10d 0h	Source: Bienenfarm Kern	Age:
Sample ID: 04-0460-5696	Code: 49822704	Client: CDM Smith - E. Krupka
Sample Date: 11 Sep-13	Material: Mesotrione	Project: Herbicide
Receipt Date:	Source: Syngenta	
Sample Age: n/a	Station:	

Comments:

PC Code 122990 MRID 49822704 dietary concentration active ingredient

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PM SD
Untransformed	C < T	161	321	227.3		14.21%

Mann-Whitney U Two-Sample Test

Control	vs	Conc-mg ai/k	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision($\alpha:5\%$)
Negative Control		161	6	n/a	1	4	Exact	0.5000	Non-Significant Effect
		321*	9	n/a	0	4	Exact	0.0500	Significant Effect
		642*	9	n/a	0	4	Exact	0.0500	Significant Effect
		1284*	9	n/a	0	4	Exact	0.0500	Significant Effect
		2569*	9	n/a	0	4	Exact	0.0500	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)
Between	2.91069	0.582139	5	87.32	<1.0E-37	Significant Effect
Error	0.08	0.0066667	12			
Total	2.99069		17			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:1\%$)
Variances	Levene Equality of Variance Test	3.029	5.064	0.0537	Equal Variances
Variances	Mod Levene Equality of Variance Test	13.93	8.746	0.0030	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.8331	0.8546	0.0046	Non-Normal Distribution

10-Day Mortality Rate Summary

Conc-mg ai/kg d	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00%
161		3	0.0167	0.0000	0.0884	0.0000	0.0000	0.0500	0.0167	173.21%	1.67%
321		3	0.0667	0.0000	0.1384	0.0500	0.0500	0.1000	0.0167	43.30%	6.67%
642		3	0.3000	0.0000	0.6726	0.3000	0.1500	0.4500	0.0866	50.00%	30.00%
1284		3	0.8333	0.5208	1.0000	0.8500	0.7000	0.9500	0.0727	15.10%	83.33%
2569		3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	100.00%

10-Day Mortality Rate Detail

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	0.0000	0.0000	0.0000
161		0.0000	0.0500	0.0000
321		0.1000	0.0500	0.0500
642		0.3000	0.4500	0.1500
1284		0.8500	0.7000	0.9500
2569		1.0000	1.0000	1.0000

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

BioChem Agrar

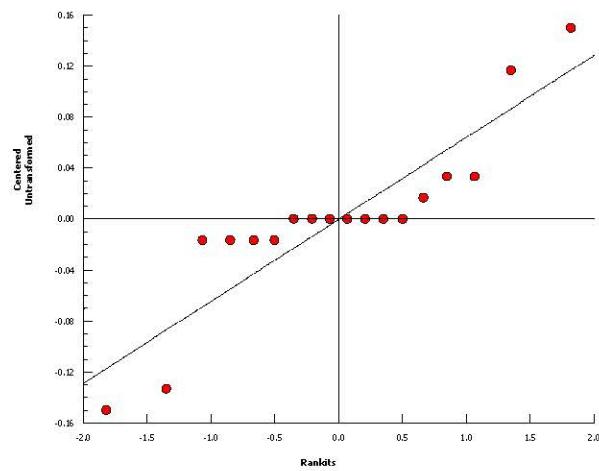
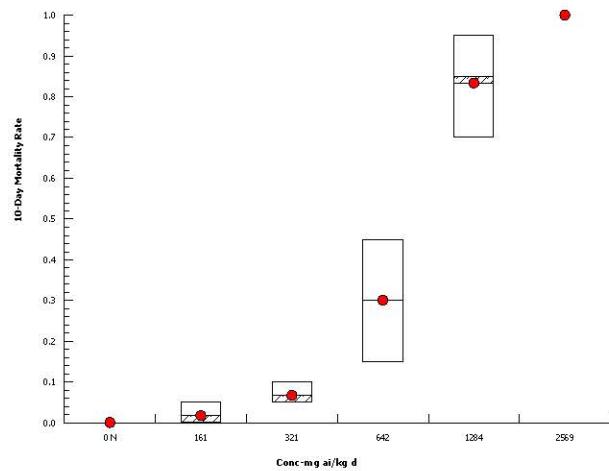
 Analysis ID: 12-1652-9516 Endpoint: 10-Day Mortality Rate
 Analyzed: 01 Dec-17 1:55 Analysis: Nonparametric-Two Sample

 CETIS Version: CETISv1.9.2
 Official Results: Yes

10-Day Mortality Rate Binomials

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	0/20	0/20	0/20
161		0/20	1/20	0/20
321		2/20	1/20	1/20
642		6/20	9/20	3/20
1284		17/20	14/20	19/20
2569		20/20	20/20	20/20

Graphics



CETIS Analytical Report

Report Date: 01 Dec-17 02:00 (p 3 of 8)

Test Code: 49822704 dc ai | 20-9566-0854

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 11-4063-8816	Endpoint: 10-Day Mortality Rate	CETIS Version: CETISv1.9.2
Analyzed: 01 Dec-17 1:56	Analysis: Nonparametric-Control vs Ord. Treatments	Official Results: Yes
Batch ID: 08-0484-2561	Test Type: 2014 Honeybee Adult Chron Oral	Analyst:
Start Date: 11 Sep-13	Protocol: Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent: 50% w/v sucrose solution
Ending Date: 21 Sep-13	Species: Apis mellifera	Brine:
Duration: 10d 0h	Source: Bienenfarm Kern	Age:
Sample ID: 04-0460-5696	Code: 49822704	Client: CDM Smith - E. Krupka
Sample Date: 11 Sep-13	Material: Mesotrione	Project: Herbicide
Receipt Date:	Source: Syngenta	
Sample Age: n/a	Station:	

Comments:

PC Code 122990 MRID 49822704 dietary concentration active ingredient

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C < T	161	321	227.3	

Jonckheere-Terpstra Step-Down Test

Control	vs	Conc-mg ai/k	Test Stat	Critical	Ties	P-Type	P-Value	Decision($\alpha:5\%$)
Negative Control		161	1	1.645	1	Asymp	0.1587	Non-Significant Effect
		321*	2.372	1.645	2	Asymp	0.0089	Significant Effect
		642*	3.427	1.645	2	Asymp	3.1E-04	Significant Effect
		1284*	4.254	1.645	2	Asymp	1.1E-05	Significant Effect
		2569*	4.97	1.645	3	Asymp	3.3E-07	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)
Between	2.91069	0.582139	5	87.32	<1.0E-37	Significant Effect
Error	0.08	0.0066667	12			
Total	2.99069		17			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:1\%$)
Variances	Levene Equality of Variance Test	3.029	5.064	0.0537	Equal Variances
Variances	Mod Levene Equality of Variance Test	13.93	8.746	0.0030	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.8331	0.8546	0.0046	Non-Normal Distribution

10-Day Mortality Rate Summary

Conc-mg ai/kg d	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00%
161		3	0.0167	0.0000	0.0884	0.0000	0.0000	0.0500	0.0167	173.21%	1.67%
321		3	0.0667	0.0000	0.1384	0.0500	0.0500	0.1000	0.0167	43.30%	6.67%
642		3	0.3000	0.0000	0.6726	0.3000	0.1500	0.4500	0.0866	50.00%	30.00%
1284		3	0.8333	0.5208	1.0000	0.8500	0.7000	0.9500	0.0727	15.10%	83.33%
2569		3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	100.00%

10-Day Mortality Rate Detail

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	0.0000	0.0000	0.0000
161		0.0000	0.0500	0.0000
321		0.1000	0.0500	0.0500
642		0.3000	0.4500	0.1500
1284		0.8500	0.7000	0.9500
2569		1.0000	1.0000	1.0000

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

BioChem Agrar

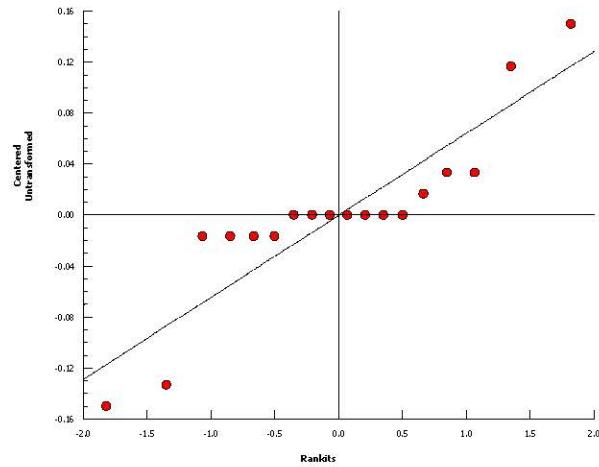
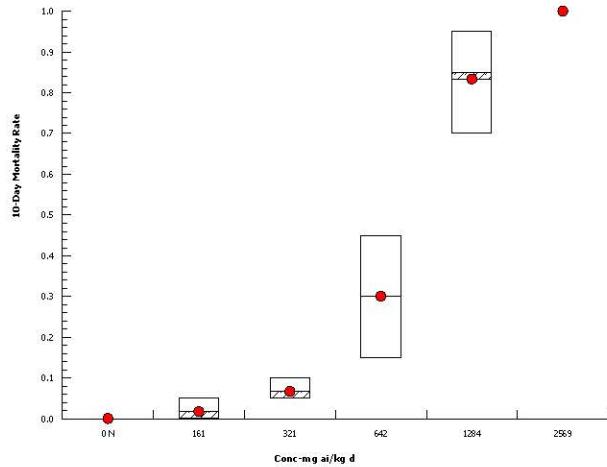
 Analysis ID: 11-4063-8816 Endpoint: 10-Day Mortality Rate
 Analyzed: 01 Dec-17 1:56 Analysis: Nonparametric-Control vs Ord. Treatments

 CETIS Version: CETISv1.9.2
 Official Results: Yes

10-Day Mortality Rate Binomials

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	0/20	0/20	0/20
161		0/20	1/20	0/20
321		2/20	1/20	1/20
642		6/20	9/20	3/20
1284		17/20	14/20	19/20
2569		20/20	20/20	20/20

Graphics



CETIS Analytical Report

Report Date: 01 Dec-17 02:00 (p 5 of 8)
Test Code: 49822704 dc ai | 20-9566-0854

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 17-9880-1636	Endpoint: Food Consumption	CETIS Version: CETISv1.9.2
Analyzed: 01 Dec-17 1:55	Analysis: Nonparametric-Two Sample	Official Results: Yes
Batch ID: 08-0484-2561	Test Type: 2014 Honeybee Adult Chron Oral	Analyst:
Start Date: 11 Sep-13	Protocol: Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent: 50% w/v sucrose solution
Ending Date: 21 Sep-13	Species: Apis mellifera	Brine:
Duration: 10d 0h	Source: Bienenfarm Kern	Age:
Sample ID: 04-0460-5696	Code: 49822704	Client: CDM Smith - E. Krupka
Sample Date: 11 Sep-13	Material: Mesotrione	Project: Herbicide
Receipt Date:	Source: Syngenta	
Sample Age: n/a	Station:	

Comments:

PC Code 122990 MRID 49822704 dietary concentration active ingredient

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PM SD
Untransformed	C > T	< 161	161	n/a		52.65%

Mann-Whitney U Two-Sample Test

Control	vs	Control II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision($\alpha:5\%$)
Negative Control		161*	9	n/a	0	4	Exact	0.0500	Significant Effect
		321*	9	n/a	0	4	Exact	0.0500	Significant Effect
		642*	9	n/a	0	4	Exact	0.0500	Significant Effect
		1284*	9	n/a	0	4	Exact	0.0500	Significant Effect
		2569	6	n/a	0	4	Exact	0.3500	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)
Between	570.001	114	5	0.9536	0.4824	Non-Significant Effect
Error	1434.55	119.546	12			
Total	2004.55		17			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:1\%$)
Variances	Bartlett Equality of Variance Test	28.14	15.09	3.4E-05	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.7299	0.8546	1.8E-04	Non-Normal Distribution

Food Consumption Summary

Conc-mg ai/kg d	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	% Effect
0	N	3	36.15	32.75	39.54	36.3	34.71	37.43	0.7889	3.78%	0.00%
161		3	30.06	20.92	39.21	30.03	26.4	33.76	2.125	12.24%	16.83%
321		3	25.32	24.01	26.63	25.35	24.78	25.83	0.3035	2.08%	29.95%
642		3	23.23	20.02	26.45	23.49	21.83	24.38	0.7472	5.57%	35.72%
1284		3	21.93	11.27	32.59	22.92	17.23	25.64	2.477	19.56%	39.33%
2569		3	35.45	-29.4	100.3	27.33	14.37	64.65	15.07	73.64%	1.93%

Food Consumption Detail

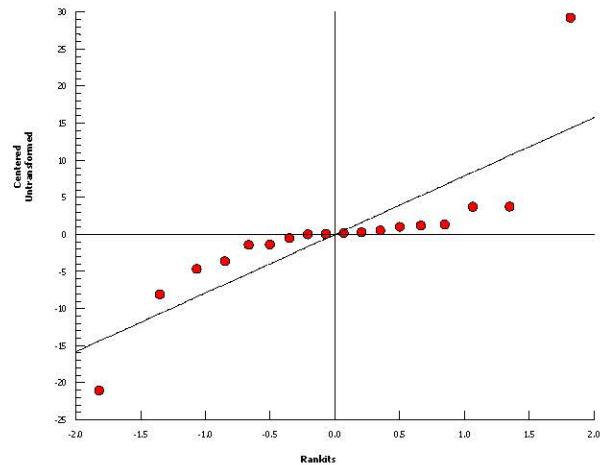
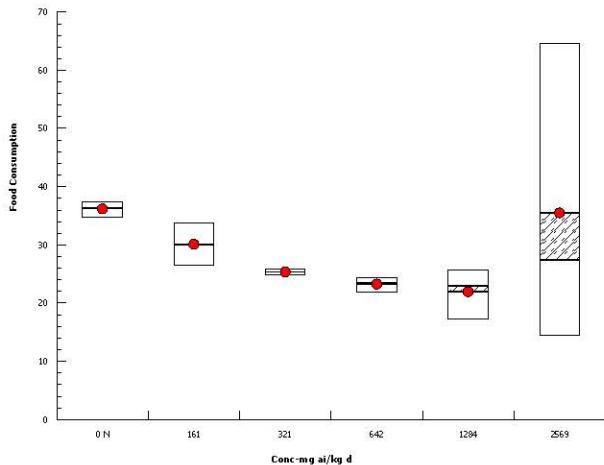
Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	36.3	37.43	34.71
161		26.4	30.03	33.76
321		25.83	25.35	24.78
642		24.38	23.49	21.83
1284		17.23	22.92	25.64
2569		64.65	14.37	27.33

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

BioChem Agrar

Analysis ID: 17-9880-1636
Analyzed: 01 Dec-17 1:55Endpoint: Food Consumption
Analysis: Nonparametric-Two SampleCETIS Version: CETISv1.9.2
Official Results: Yes

Graphics



CETIS Analytical Report

Report Date: 01 Dec-17 02:00 (p 7 of 8)
Test Code: 49822704 dc ai | 20-9566-0854

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 17-5677-0147	Endpoint: Food Consumption	CETIS Version: CETISv1.9.2
Analyzed: 01 Dec-17 1:55	Analysis: Nonparametric-Control vs Ord. Treatments	Official Results: Yes
Batch ID: 08-0484-2561	Test Type: 2014 Honeybee Adult Chron Oral	Analyst:
Start Date: 11 Sep-13	Protocol: Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent: 50% w/v sucrose solution
Ending Date: 21 Sep-13	Species: Apis mellifera	Brine:
Duration: 10d 0h	Source: Bienenfarm Kern	Age:
Sample ID: 04-0460-5696	Code: 49822704	Client: CDM Smith - E. Krupka
Sample Date: 11 Sep-13	Material: Mesotrione	Project: Herbicide
Receipt Date:	Source: Syngenta	
Sample Age: n/a	Station:	

Comments:

PC Code 122990 MRID 49822704 dietary concentration active ingredient

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	< 161	161	n/a	

Jonckheere-Terpstra Step-Down Test

Control	vs	Control II	Test Stat	Critical	P-Type	P-Value	Decision($\alpha:5\%$)
Negative Control		161*	9	n/a	Exact	0.0500	Significant Effect
		321*	27	n/a	Exact	6.0E-04	Significant Effect
		642*	54	n/a	Exact	2.7E-06	Significant Effect
		1284*	84	n/a	Exact	5.1E-06	Significant Effect
		2569*	104	n/a	Exact	0.0022	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)
Between	570.001	114	5	0.9536	0.4824	Non-Significant Effect
Error	1434.55	119.546	12			
Total	2004.55		17			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:1\%$)
Variances	Bartlett Equality of Variance Test	28.14	15.09	3.4E-05	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.7299	0.8546	1.8E-04	Non-Normal Distribution

Food Consumption Summary

Conc-mg ai/kg d	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	% Effect
0	N	3	36.15	32.75	39.54	36.3	34.71	37.43	0.7889	3.78%	0.00%
161		3	30.06	20.92	39.21	30.03	26.4	33.76	2.125	12.24%	16.83%
321		3	25.32	24.01	26.63	25.35	24.78	25.83	0.3035	2.08%	29.95%
642		3	23.23	20.02	26.45	23.49	21.83	24.38	0.7472	5.57%	35.72%
1284		3	21.93	11.27	32.59	22.92	17.23	25.64	2.477	19.56%	39.33%
2569		3	35.45	-29.4	100.3	27.33	14.37	64.65	15.07	73.64%	1.93%

Food Consumption Detail

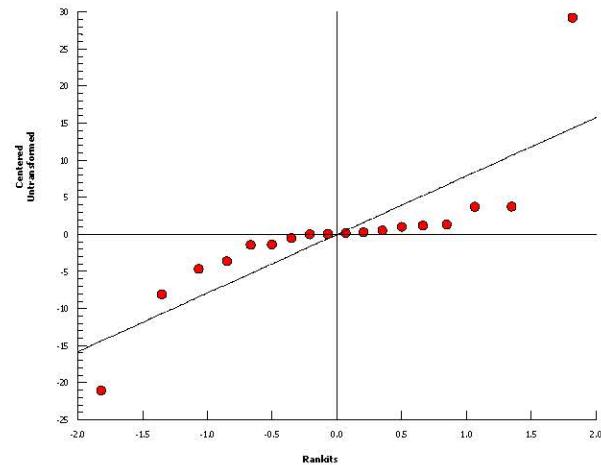
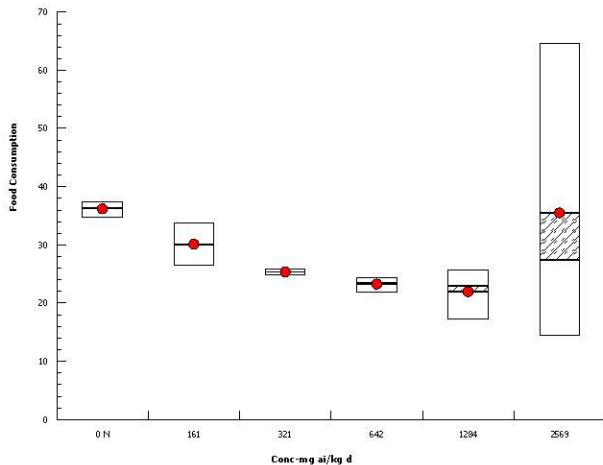
Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	36.3	37.43	34.71
161		26.4	30.03	33.76
321		25.83	25.35	24.78
642		24.38	23.49	21.83
1284		17.23	22.92	25.64
2569		64.65	14.37	27.33

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

BioChem Agrar

Analysis ID: 17-5677-0147
Analyzed: 01 Dec-17 1:55Endpoint: Food Consumption
Analysis: Nonparametric-Control vs Ord. TreatmentsCETIS Version: CETISv1.9.2
Official Results: Yes

Graphics



CETIS Analytical Report

Report Date: 01 Dec-17 02:00 (p 1 of 3)
 Test Code: 49822704 dc ai | 20-9566-0854

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

BioChem Agrar

Analysis ID: 14-8320-5439	Endpoint: 10-Day Mortality Rate	CETIS Version: CETISv1.9.2
Analyzed: 01 Dec-17 1:55	Analysis: Linear Regression (GLM)	Official Results: Yes
Batch ID: 08-0484-2561	Test Type: 2014 Honeybee Adult Chron Oral	Analyst:
Start Date: 11 Sep-13	Protocol: Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent: 50% w/v sucrose solution
Ending Date: 21 Sep-13	Species: Apis mellifera	Brine:
Duration: 10d 0h	Source: Bienenfarm Kern	Age:
Sample ID: 04-0460-5696	Code: 49822704	Client: CDM Smith - E. Krupka
Sample Date: 11 Sep-13	Material: Mesotrione	Project: Herbicide
Receipt Date:	Source: Syngenta	
Sample Age: n/a	Station:	

Comments:

PC Code 122990 MRID 49822704 dietary concentration active ingredient

Linear Regression Options

Model Name	Link Function	Threshold Option	Thresh	Optimized Pooled	Het Corr	Weighted
Log-Normal (Probit) $\eta = \text{inv } \Phi[\pi]$		Zero Threshold	0	No	No	Yes

Regression Summary

Iters	LL	AICc	BIC	Mu	Sigma	Adj R2	F Stat	Critical	P-Value	Decision($\alpha:5\%$)
5	-21.74	48.48	48.89	2.885	0.2431	0.998	1.086	3.708	0.3989	Non-Significant Lack of Fit

Point Estimates

Level	mg ai/kg	95% LCL	95% UCL
EC5	305.8	189.6	403.5
EC10	374.8	251.7	477.3
EC15	429.9	303.7	536.4
EC20	479.4	351.6	590.2
EC25	526.4	397.6	642.4
EC40	666.4	533.7	807.8
EC50	768	628.1	940.3

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision($\alpha:5\%$)
Slope	4.113	0.5984	2.82	5.406	6.873	1.1E-05	Significant Parameter
Intercept	-11.87	1.732	-15.61	-8.124	-6.85	1.2E-05	Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)
Model	15660	15660	1	7161	<1.0E-37	Significant
Lack of Fit	6.99	2.33	3	1.086	0.3989	Non-Significant
Pure Error	21.45	2.145	10			
Residual	28.44	2.187	13			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision($\alpha:5\%$)
Goodness-of-Fit	Pearson Chi-Sq GOF Test	28.44	22.36	0.0079	Significant Heterogeneity
	Likelihood Ratio GOF Test	17.44	22.36	0.1802	Non-Significant Heterogeneity
Variances	Mod Levene Equality of Variance	0.7358	5.192	0.6056	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.8807	0.8815	0.0486	Non-Normal Distribution
	Anderson-Darling A2 Normality Te	0.8425	2.492	0.0299	Non-Normal Distribution

CETIS Analytical Report

Report Date: 01 Dec-17 02:00 (p 2 of 3)
Test Code: 49822704 dc aii | 20-9566-0854

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 14-8320-5439 **Endpoint:** 10-Day Mortality Rate
Analyzed: 01 Dec-17 1:55 **Analysis:** Linear Regression (GLM)

CETIS Version: CETISv1.9.2
Official Results: Yes

10-Day Mortality Rate Summary**Calculated Variate(A/B)**

Conc-mg ai/kg d	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
161		3	0.0167	0.0000	0.0500	0.0167	0.0289	173.20%	0.0%	1	60
321		3	0.0667	0.0500	0.1000	0.0167	0.0289	43.30%	5.09%	4	60
642		3	0.3000	0.1500	0.4500	0.0866	0.1500	50.00%	28.81%	18	60
1284		3	0.8333	0.7000	0.9500	0.0727	0.1258	15.10%	83.05%	50	60
2569		3	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	100.0%	60	60

10-Day Mortality Rate Detail

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
161		0.0000	0.0500	0.0000
321		0.1000	0.0500	0.0500
642		0.3000	0.4500	0.1500
1284		0.8500	0.7000	0.9500
2569		1.0000	1.0000	1.0000

10-Day Mortality Rate Binomials

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
161		0/20	1/20	0/20
321		2/20	1/20	1/20
642		6/20	9/20	3/20
1284		17/20	14/20	19/20
2569		20/20	20/20	20/20

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

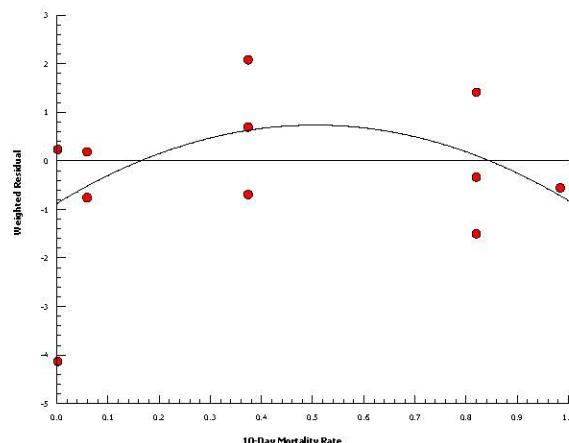
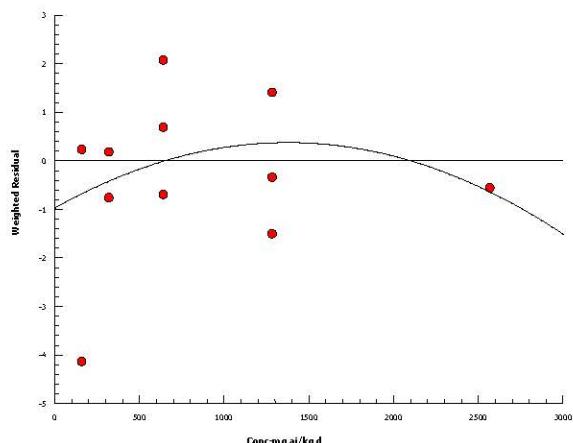
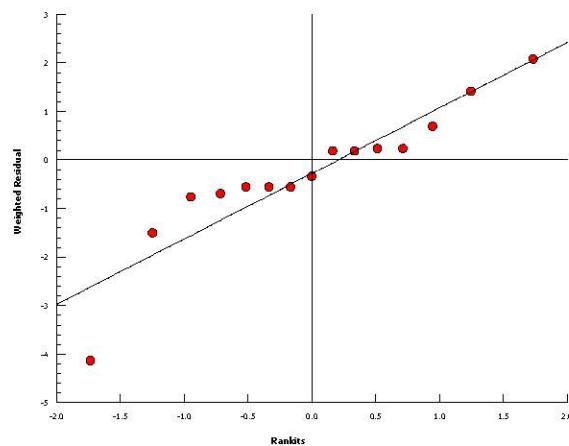
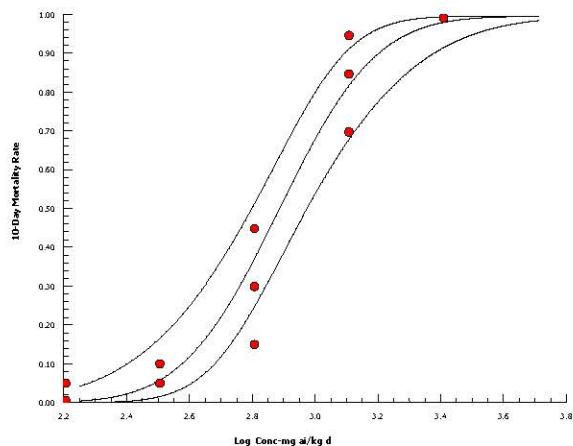
BioChem Agrar

 Analysis ID: 14-8320-5439
 Analyzed: 01 Dec-17 1:55

 Endpoint: 10-Day Mortality Rate
 Analysis: Linear Regression (GLM)

 CETIS Version: CETISv1.9.2
 Official Results: Yes

Graphics

Log-Normal: $\text{inv } \Phi[\pi] = \alpha + \beta \cdot \log[x]$ 

CETIS Analytical Report

Report Date: 01 Dec-17 02:01 (p 1 of 2)
 Test Code: 49822704 dc ai | 20-9566-0854

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

BioChem Agrar

Analysis ID:	17-4312-4374	Endpoint:	Food Consumption	CETIS Version:	CETISv1.9.2
Analyzed:	01 Dec-17 1:55	Analysis:	Nonlinear Regression (NLR)	Official Results:	Yes
Batch ID:	08-0484-2561	Test Type:	2014 Honeybee Adult Chron Oral	Analyst:	
Start Date:	11 Sep-13	Protocol:	Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent:	50% w/v sucrose solution
Ending Date:	21 Sep-13	Species:	Apis mellifera	Brine:	
Duration:	10d 0h	Source:	Bienenfarm Kern	Age:	
Sample ID:	04-0460-5696	Code:	49822704	Client:	CDM Smith - E. Krupka
Sample Date:	11 Sep-13	Material:	Mesotrione	Project:	Herbicide
Receipt Date:		Source:	Syngenta		
Sample Age:	n/a	Station:			

Comments:

PC Code 122990 MRID 49822704 dietary concentration active ingredient

Non-Linear Regression Options

Model Name and Function	Weighting Function	PTBS Function	X Trans	Y Trans
3P Cum Log-Normal (Probit): $\mu = \alpha [1 - \Phi[\log(x/\bar{\delta})/\gamma]]$	Normal [$\omega=1$]	Off [$\mu^*=\mu$]	None	None

Regression Summary

Iters	Log LL	AICc	BIC	Adj R2	Optimize	F Stat	Critical	P-Value	Decision($\alpha:5\%$)
23	-45.27	98.25	99.21		Yes	3.249	3.49	0.0600	Non-Significant Lack of Fit

Point Estimates

Level	mg ai/kg	95% LCL	95% UCL
EC5	0.0000000	n/a	n/a
EC10	0.0000027	n/a	n/a
EC15	0.002569	n/a	n/a
EC20	0.5974	n/a	n/a
EC25	64.05	n/a	8.06E+17
EC40	8363000	n/a	n/a
EC50	99980000	n/a	n/a
EC90	3.694E+25	n/a	n/a

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision($\alpha:5\%$)
α	36.28	7.601	20.08	52.48	4.774	2.5E-04	Significant Parameter
γ	27.97	224.1	-449.8	505.7	0.1248	0.9023	Non-Significant Parameter
$\bar{\delta}$	1E+10	1.32E+12	-2.8E+12	2.83E+12	0.007549	0.9941	Non-Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)
Model	14220	4741	3	27.35	2.5E-06	Significant
Lack of Fit	1165	388.4	3	3.249	0.0600	Non-Significant
Pure Error	1435	119.5	12			
Residual	2600	173.3	15			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision($\alpha:5\%$)
Variances	Mod Levene Equality of Variance	3.576	4.387	0.0762	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.663	0.8965	3.1E-05	Non-Normal Distribution
	Anderson-Darling A2 Normality Te	2.254	2.492	<1.0E-37	Non-Normal Distribution

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

BioChem Agrar

Analysis ID: 17-4312-4374

Endpoint: Food Consumption

CETIS Version: CETISv1.9.2

Analyzed: 01 Dec-17 1:55

Analysis: Nonlinear Regression (NLR)

Official Results: Yes

Food Consumption Summary

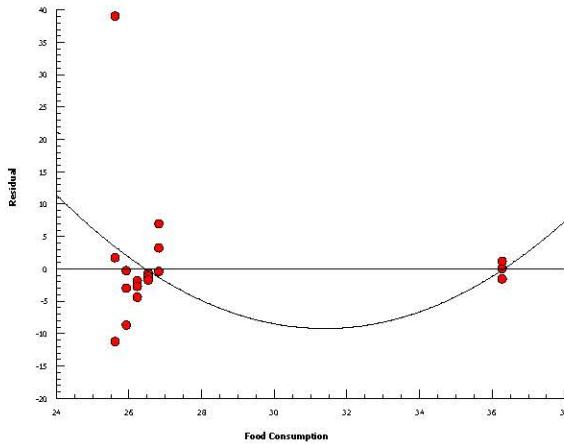
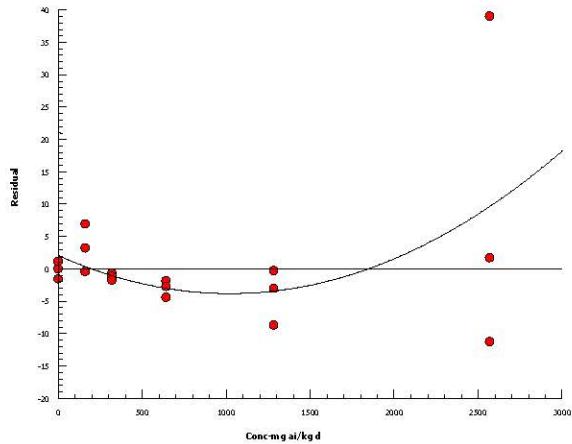
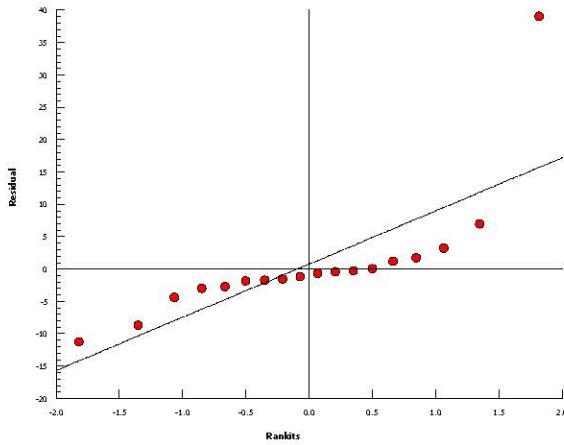
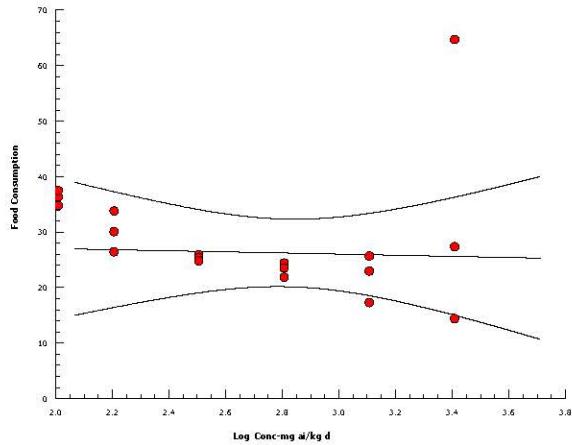
Calculated Variate

Conc-mg ai/kg d	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	3	36.15	34.71	37.43	0.7889	1.366	3.78%	0.0%
161		3	30.06	26.4	33.76	2.125	3.68	12.24%	16.83%
321		3	25.32	24.78	25.83	0.3035	0.5256	2.08%	29.95%
642		3	23.23	21.83	24.38	0.7472	1.294	5.57%	35.72%
1284		3	21.93	17.23	25.64	2.477	4.29	19.56%	39.33%
2569		3	35.45	14.37	64.65	15.07	26.11	73.64%	1.93%

Food Consumption Detail

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	36.3	37.43	34.71
161		26.4	30.03	33.76
321		25.83	25.35	24.78
642		24.38	23.49	21.83
1284		17.23	22.92	25.64
2569		64.65	14.37	27.33

Graphics

Model: 3P Cum Log-Normal (Probit): $\mu = \alpha [1 - \Phi[\log[x/\delta]/\gamma]]$ Distribution: Normal [$\omega=1$]

CETIS Analytical Report

Report Date: 01 Dec-17 02:01 (p 1 of 2)
Test Code: 49822704 dc ai | 20-9566-0854

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID:	02-8408-6518	Endpoint:	10-Day Mortality Rate	CETIS Version:	CETISv1.9.2
Analyzed:	01 Dec-17 1:55	Analysis:	Trimmed Spearman-Kärber	Official Results:	Yes
Batch ID:	08-0484-2561	Test Type:	2014 Honeybee Adult Chron Oral	Analyst:	
Start Date:	11 Sep-13	Protocol:	Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent:	50% w/v sucrose solution
Ending Date:	21 Sep-13	Species:	Apis mellifera	Brine:	
Duration:	10d 0h	Source:	Bienenfarm Kern	Age:	
Sample ID:	04-0460-5696	Code:	49822704	Client:	CDM Smith - E. Krupka
Sample Date:	11 Sep-13	Material:	Mesotrione	Project:	Herbicide
Receipt Date:		Source:	Syngenta		
Sample Age:	n/a	Station:			

Comments:

PC Code 122990 MRID 49822704 dietary concentration active ingredient

Trimmed Spearman-Kärber Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0	1.67%	2.899	0.02585	791.9	703	892

10-Day Mortality Rate Summary**Calculated Variate(A/B)**

Conc-mg ai/kg d	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	N	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.00%	0.0%	0	60
161		3	0.0167	0.0000	0.0500	0.0167	0.0289	173.20%	1.67%	1	60
321		3	0.0667	0.0500	0.1000	0.0167	0.0289	43.30%	6.67%	4	60
642		3	0.3000	0.1500	0.4500	0.0866	0.1500	50.00%	30.0%	18	60
1284		3	0.8333	0.7000	0.9500	0.0727	0.1258	15.10%	83.33%	50	60
2569		3	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	100.0%	60	60

10-Day Mortality Rate Detail

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	0.0000	0.0000	0.0000
161		0.0000	0.0500	0.0000
321		0.1000	0.0500	0.0500
642		0.3000	0.4500	0.1500
1284		0.8500	0.7000	0.9500
2569		1.0000	1.0000	1.0000

10-Day Mortality Rate Binomials

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	0/20	0/20	0/20
161		0/20	1/20	0/20
321		2/20	1/20	1/20
642		6/20	9/20	3/20
1284		17/20	14/20	19/20
2569		20/20	20/20	20/20

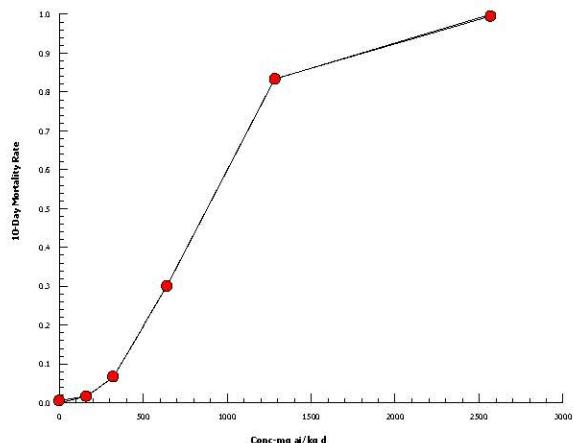
CETIS Analytical Report

Report Date: 01 Dec-17 02:01 (p 2 of 2)
Test Code: 49822704 dc ai | 20-9566-0854

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 02-8408-6518 Endpoint: 10-Day Mortality Rate
Analyzed: 01 Dec-17 1:55 Analysis: Trimmed Spearman-Kärber

CETIS Version: CETISv1.9.2
Official Results: Yes

Graphics

CETIS Summary Report

Report Date: 01 Dec-17 02:03 (p 1 of 2)

Test Code: 49822704 dc ai | 20-9566-0854

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Batch ID:	08-0484-2561	Test Type:	2014 Honeybee Adult Chron Oral	Analyst:	
Start Date:	11 Sep-13	Protocol:	Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent:	50% w/v sucrose solution
Ending Date:	21 Sep-13	Species:	Apis mellifera	Brine:	
Duration:	10d 0h	Source:	Bienenfarm Kern	Age:	
Sample ID:	04-0460-5696	Code:	49822704	Client:	CDM Smith - E. Krupka
Sample Date:	11 Sep-13	Material:	Mesotrione	Project:	Herbicide
Receipt Date:		Source:	Syngenta		
Sample Age:	n/a	Station:			

Comments:

PC Code 122990 MRID 49822704 dietary concentration active ingredient

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD	✓
11-4063-8816	10-Day Mortality Rate	Jonckheere-Terpstra Step-Down Test	161	321	227.3		n/a	
12-1652-9516	10-Day Mortality Rate	Mann-Whitney U Two-Sample Test	161	321	227.3		14.2%	
17-5677-0147	Food Consumption	Jonckheere-Terpstra Step-Down Test	< 161	161	n/a		n/a	✓
17-9880-1636	Food Consumption	Mann-Whitney U Two-Sample Test	< 161	161	n/a		52.7%	✓

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	mg ai/kg	95% LCL	95% UCL	TU	✓
14-8320-5439	10-Day Mortality Rate	Regression: Log-Normal (Probit)	EC5	305.8	189.6	403.5		
			EC10	374.8	251.7	477.3		
			EC15	429.9	303.7	536.4		
			EC20	479.4	351.6	590.2		
			EC25	526.4	397.6	642.4		
			EC40	666.4	533.7	807.8		✓
			EC50	768	628.1	940.3		✓
02-8408-6518	10-Day Mortality Rate	Trimmed Spearman-Kärber	EC50	791.9	703	892		
17-4312-4374	Food Consumption	Regression: 3P Cum Log-Normal (Probit)	EC5	0.0000000	n/a	n/a		✓
			EC10	0.0000027	n/a	n/a		✓
			EC15	0.002569	n/a	n/a		✓
			EC20	0.5974	n/a	n/a		✓
			EC25	64.05	n/a	8.06E+17		✓
			EC40	8363000	n/a	n/a		
			EC50	99980000	n/a	n/a		
			EC90	3.694E+25	n/a	n/a		

10-Day Mortality Rate Summary

Conc-mg ai/kg d	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00%	
161		3	0.0167	0.0000	0.0884	0.0000	0.0500	0.0167	0.0289	173.21%	1.67%
321		3	0.0667	0.0000	0.1384	0.0500	0.1000	0.0167	0.0289	43.30%	6.67%
642		3	0.3000	0.0000	0.6726	0.1500	0.4500	0.0866	0.1500	50.00%	30.00%
1284		3	0.8333	0.5208	1.0000	0.7000	0.9500	0.0727	0.1258	15.10%	83.33%
2569		3	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	100.00%

Food Consumption Summary

Conc-mg ai/kg d	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	3	36.15	32.75	39.54	34.71	37.43	0.7889	1.366	3.78%	0.00%
161		3	30.06	20.92	39.21	26.4	33.76	2.125	3.68	12.24%	16.83%
321		3	25.32	24.01	26.63	24.78	25.83	0.3035	0.5256	2.08%	29.95%
642		3	23.23	20.02	26.45	21.83	24.38	0.7472	1.294	5.57%	35.72%
1284		3	21.93	11.27	32.59	17.23	25.64	2.477	4.29	19.56%	39.33%
2569		3	35.45	-29.4	100.3	14.37	64.65	15.07	26.11	73.64%	1.93%

CETIS Summary ReportReport Date: 01 Dec-17 02:03 (p 2 of 2)
Test Code: 49822704 dc ai | 20-9566-0854**Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study****BioChem Agrar****10-Day Mortality Rate Detail**

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	0.0000	0.0000	0.0000
161		0.0000	0.0500	0.0000
321		0.1000	0.0500	0.0500
642		0.3000	0.4500	0.1500
1284		0.8500	0.7000	0.9500
2569		1.0000	1.0000	1.0000

Food Consumption Detail

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	36.3	37.43	34.71
161		26.4	30.03	33.76
321		25.83	25.35	24.78
642		24.38	23.49	21.83
1284		17.23	22.92	25.64
2569		64.65	14.37	27.33

CETIS Analytical Report

Report Date: 12 Dec-17 02:44 (p 1 of 8)
 Test Code: 49822704 dc fm | 01-5606-7976

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

BioChem Agrar

Analysis ID:	09-3899-8183	Endpoint:	10-Day Mortality Rate	CETIS Version:	CETISv1.9.2
Analyzed:	12 Dec-17 2:44	Analysis:	Nonparametric-Two Sample	Official Results:	Yes
Batch ID:	17-5890-7037	Test Type:	2014 Honeybee Adult Chron Oral	Analyst:	
Start Date:	11 Sep-13	Protocol:	Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent:	50% w/v sucrose solution
Ending Date:	21 Sep-13	Species:	Apis mellifera	Brine:	
Duration:	10d 0h	Source:	Bienenfarm Kern	Age:	
Sample ID:	12-8203-0230	Code:	49822704	Client:	CDM Smith - E. Krupka
Sample Date:	11 Sep-13	Material:	Mesotrione	Project:	Herbicide
Receipt Date:	30 Nov-17 20:44	Source:	Syngenta	Station:	
Sample Age:	n/a				

Comments:

'10-Day Mortality Rate' endpoint...

There are a total of 3 tied group(s) detected. CETIS applied a tie correction to the asymptotic normal approximation in cases where ties occurred across groups. Since Monte Carlo simulations can also effectively address ties, it is suggested that you re-analyze the data with Monte Carlo.
 PC Code 122990 MRID 49822704 dietary concentration formulated product

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C < T	1771	3531	2501		14.21%

Mann-Whitney U Two-Sample Test

Control	vs	Conc-mg ai/k	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α :5%)
Negative Control		1771	6	n/a	1	4	Exact	0.5000	Non-Significant Effect
		3531*	9	n/a	0	4	Exact	0.0500	Significant Effect
		7063*	9	n/a	0	4	Exact	0.0500	Significant Effect
		14125*	9	n/a	0	4	Exact	0.0500	Significant Effect
		28262*	9	n/a	0	4	Exact	0.0500	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α :5%)
Between	2.91069	0.582139	5	87.32	<1.0E-37	Significant Effect
Error	0.08	0.0066667	12			
Total	2.99069		17			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α :1%)
Variances	Levene Equality of Variance Test	3.029	5.064	0.0537	Equal Variances
Variances	Mod Levene Equality of Variance Test	13.93	8.746	0.0030	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.8331	0.8546	0.0046	Non-Normal Distribution

10-Day Mortality Rate Summary

Conc-mg ai/kg d	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	% Effect
0	N	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00%	
1771		3	0.0167	0.0000	0.0884	0.0000	0.0000	0.0500	0.0167	173.21%	1.67%
3531		3	0.0667	0.0000	0.1384	0.0500	0.0500	0.1000	0.0167	43.30%	6.67%
7063		3	0.3000	0.0000	0.6726	0.3000	0.1500	0.4500	0.0866	50.00%	30.00%
14125		3	0.8333	0.5208	1.0000	0.8500	0.7000	0.9500	0.0727	15.10%	83.33%
28262		3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	100.00%

10-Day Mortality Rate Detail

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	0.0000	0.0000	0.0000
1771		0.0000	0.0500	0.0000
3531		0.1000	0.0500	0.0500
7063		0.3000	0.4500	0.1500
14125		0.8500	0.7000	0.9500
28262		1.0000	1.0000	1.0000

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

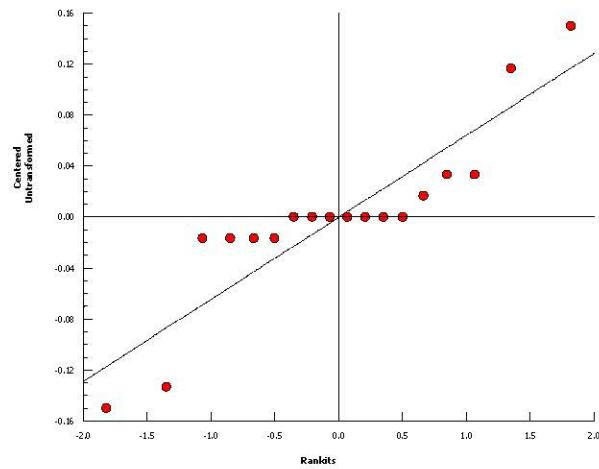
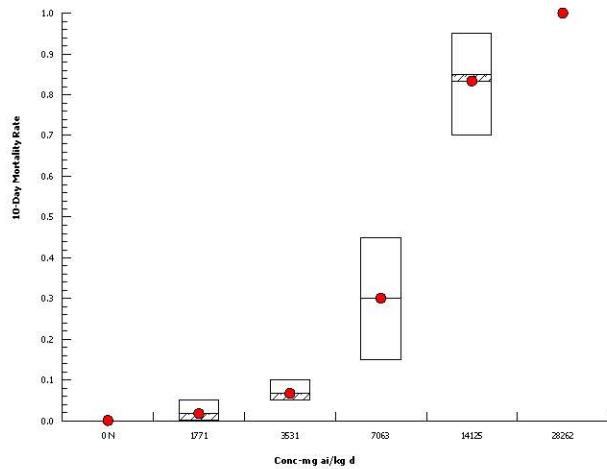
BioChem Agrar

Analysis ID: 09-3899-8183 Endpoint: 10-Day Mortality Rate
Analyzed: 12 Dec-17 2:44 Analysis: Nonparametric-Two SampleCETIS Version: CETISv1.9.2
Official Results: Yes

10-Day Mortality Rate Binomials

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	0/20	0/20	0/20
1771		0/20	1/20	0/20
3531		2/20	1/20	1/20
7063		6/20	9/20	3/20
14125		17/20	14/20	19/20
28262		20/20	20/20	20/20

Graphics



CETIS Analytical Report

Report Date: 12 Dec-17 02:44 (p 3 of 8)
Test Code: 49822704 dc fm | 01-5606-7976

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 19-5174-0508	Endpoint: 10-Day Mortality Rate	CETIS Version: CETISv1.9.2
Analyzed: 12 Dec-17 2:44	Analysis: Nonparametric-Control vs Ord. Treatments	Official Results: Yes
Batch ID: 17-5890-7037	Test Type: 2014 Honeybee Adult Chron Oral	Analyst:
Start Date: 11 Sep-13	Protocol: Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent: 50% w/v sucrose solution
Ending Date: 21 Sep-13	Species: Apis mellifera	Brine:
Duration: 10d 0h	Source: Bienenfarm Kern	Age:
Sample ID: 12-8203-0230	Code: 49822704	Client: CDM Smith - E. Krupka
Sample Date: 11 Sep-13	Material: Mesotrione	Project: Herbicide
Receipt Date: 30 Nov-17 20:44	Source: Syngenta	
Sample Age: n/a	Station:	

Comments:

'10-Day Mortality Rate' endpoint...

There are a total of 3 tied group(s) detected. CETIS applied a tie correction to the asymptotic normal approximation in cases where ties occurred across groups. Since Monte Carlo simulations can also effectively address ties, it is suggested that you re-analyze the data with Monte Carlo.
PC Code 122990 MRID 49822704 dietary concentration formulated product

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C < T	1771	3531	2501	

Jonckheere-Terpstra Step-Down Test

Control	vs	Conc-mg ai/k	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α :5%)
Negative Control		1771	1	1.645	1	Asymp	0.1587	Non-Significant Effect
		3531*	2.372	1.645	2	Asymp	0.0089	Significant Effect
		7063*	3.427	1.645	2	Asymp	3.1E-04	Significant Effect
		14125*	4.254	1.645	2	Asymp	1.1E-05	Significant Effect
		28262*	4.97	1.645	3	Asymp	3.3E-07	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α :5%)
Between	2.91069	0.582139	5	87.32	<1.0E-37	Significant Effect
Error	0.08	0.0066667	12			
Total	2.99069		17			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α :1%)
Variances	Levene Equality of Variance Test	3.029	5.064	0.0537	Equal Variances
Variances	Mod Levene Equality of Variance Test	13.93	8.746	0.0030	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.8331	0.8546	0.0046	Non-Normal Distribution

10-Day Mortality Rate Summary

Conc-mg ai/kg d	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	% Effect
0	N	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00%	
1771		3	0.0167	0.0000	0.0884	0.0000	0.0000	0.0500	0.0167	173.21%	1.67%
3531		3	0.0667	0.0000	0.1384	0.0500	0.0500	0.1000	0.0167	43.30%	6.67%
7063		3	0.3000	0.0000	0.6726	0.3000	0.1500	0.4500	0.0866	50.00%	30.00%
14125		3	0.8333	0.5208	1.0000	0.8500	0.7000	0.9500	0.0727	15.10%	83.33%
28262		3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	100.00%

10-Day Mortality Rate Detail

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	0.0000	0.0000	0.0000
1771		0.0000	0.0500	0.0000
3531		0.1000	0.0500	0.0500
7063		0.3000	0.4500	0.1500
14125		0.8500	0.7000	0.9500
28262		1.0000	1.0000	1.0000

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

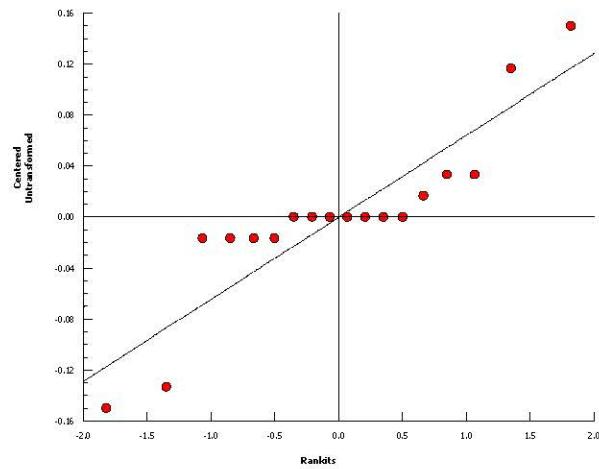
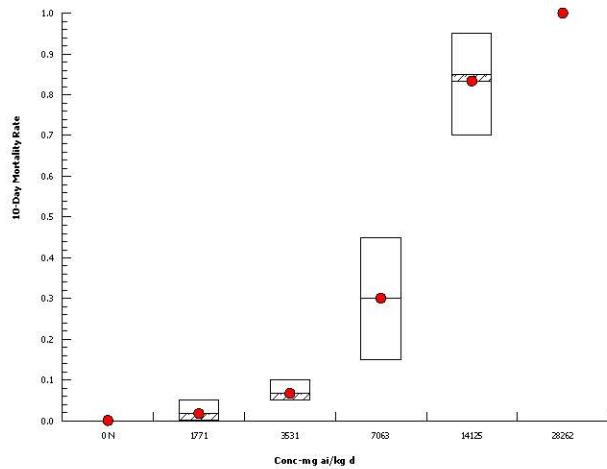
BioChem Agrar

Analysis ID: 19-5174-0508 Endpoint: 10-Day Mortality Rate
 Analyzed: 12 Dec-17 2:44 Analysis: Nonparametric-Control vs Ord. Treatments CETIS Version: CETISv1.9.2
 Official Results: Yes

10-Day Mortality Rate Binomials

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	0/20	0/20	0/20
1771		0/20	1/20	0/20
3531		2/20	1/20	1/20
7063		6/20	9/20	3/20
14125		17/20	14/20	19/20
28262		20/20	20/20	20/20

Graphics



CETIS Analytical Report

Report Date: 12 Dec-17 02:45 (p 5 of 8)
 Test Code: 49822704 dc fm | 01-5606-7976

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

BioChem Agrar

Analysis ID: 12-2055-8299	Endpoint: Food Consumption	CETIS Version: CETISv1.9.2
Analyzed: 12 Dec-17 2:43	Analysis: Nonparametric-Two Sample	Official Results: Yes
Batch ID: 17-5890-7037	Test Type: 2014 Honeybee Adult Chron Oral	Analyst:
Start Date: 11 Sep-13	Protocol: Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent: 50% w/v sucrose solution
Ending Date: 21 Sep-13	Species: Apis mellifera	Brine:
Duration: 10d 0h	Source: Bienenfarm Kern	Age:
Sample ID: 12-8203-0230	Code: 49822704	Client: CDM Smith - E. Krupka
Sample Date: 11 Sep-13	Material: Mesotrione	Project: Herbicide
Receipt Date: 30 Nov-17 20:44	Source: Syngenta	
Sample Age: n/a	Station:	

Comments:

'10-Day Mortality Rate' endpoint...

There are a total of 3 tied group(s) detected. CETIS applied a tie correction to the asymptotic normal approximation in cases where ties occurred across groups. Since Monte Carlo simulations can also effectively address ties, it is suggested that you re-analyze the data with Monte Carlo.
 PC Code 122990 MRID 49822704 dietary concentration formulated product

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	< 1771	1771	n/a		52.65%

Mann-Whitney U Two-Sample Test

Control	vs	Control II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α :5%)
Negative Control		1771*	9	n/a	0	4	Exact	0.0500	Significant Effect
		3531*	9	n/a	0	4	Exact	0.0500	Significant Effect
		7063*	9	n/a	0	4	Exact	0.0500	Significant Effect
		14125*	9	n/a	0	4	Exact	0.0500	Significant Effect
		28262	6	n/a	0	4	Exact	0.3500	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α :5%)
Between	570.001	114	5	0.9536	0.4824	Non-Significant Effect
Error	1434.55	119.546	12			
Total	2004.55		17			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α :1%)
Variances	Bartlett Equality of Variance Test	28.14	15.09	3.4E-05	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.7299	0.8546	1.8E-04	Non-Normal Distribution

Food Consumption Summary

Conc-mg ai/kg d	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	3	36.15	32.75	39.54	36.3	34.71	37.43	0.7889	3.78%	0.00%
1771		3	30.06	20.92	39.21	30.03	26.4	33.76	2.125	12.24%	16.83%
3531		3	25.32	24.01	26.63	25.35	24.78	25.83	0.3035	2.08%	29.95%
7063		3	23.23	20.02	26.45	23.49	21.83	24.38	0.7472	5.57%	35.72%
14125		3	21.93	11.27	32.59	22.92	17.23	25.64	2.477	19.56%	39.33%
28262		3	35.45	-29.4	100.3	27.33	14.37	64.65	15.07	73.64%	1.93%

Food Consumption Detail

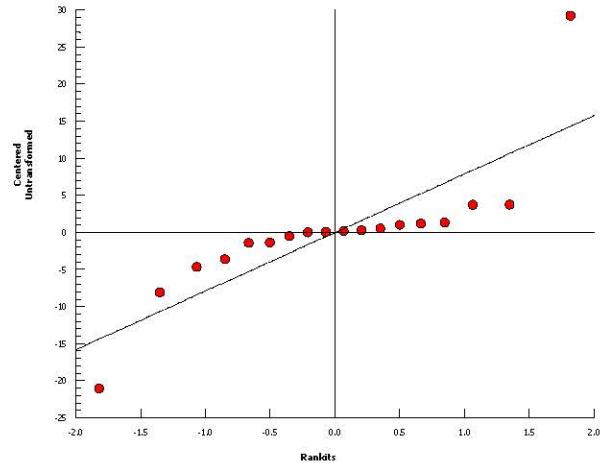
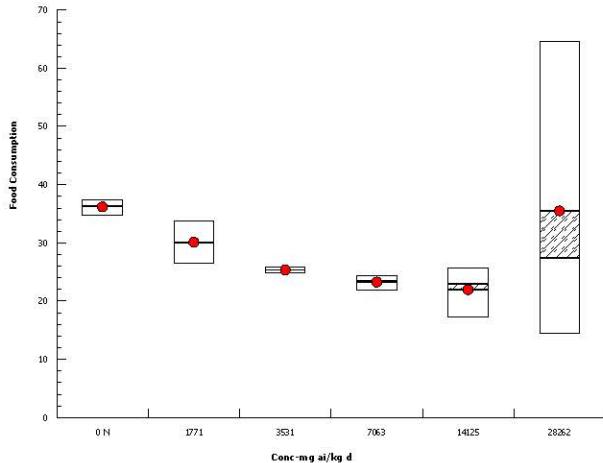
Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	36.3	37.43	34.71
1771		26.4	30.03	33.76
3531		25.83	25.35	24.78
7063		24.38	23.49	21.83
14125		17.23	22.92	25.64
28262		64.65	14.37	27.33

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

BioChem Agrar

Analysis ID: 12-2055-8299
Analyzed: 12 Dec-17 2:43Endpoint: Food Consumption
Analysis: Nonparametric-Two SampleCETIS Version: CETISv1.9.2
Official Results: Yes

Graphics



CETIS Analytical Report

Report Date: 12 Dec-17 02:45 (p 7 of 8)
Test Code: 49822704 dc fm | 01-5606-7976

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 12-9291-1443	Endpoint: Food Consumption	CETIS Version: CETISv1.9.2
Analyzed: 12 Dec-17 2:44	Analysis: Nonparametric-Control vs Ord. Treatments	Official Results: Yes
Batch ID: 17-5890-7037	Test Type: 2014 Honeybee Adult Chron Oral	Analyst:
Start Date: 11 Sep-13	Protocol: Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent: 50% w/v sucrose solution
Ending Date: 21 Sep-13	Species: Apis mellifera	Brine:
Duration: 10d 0h	Source: Bienenfarm Kern	Age:
Sample ID: 12-8203-0230	Code: 49822704	Client: CDM Smith - E. Krupka
Sample Date: 11 Sep-13	Material: Mesotrione	Project: Herbicide
Receipt Date: 30 Nov-17 20:44	Source: Syngenta	
Sample Age: n/a	Station:	

Comments:

'10-Day Mortality Rate' endpoint...

There are a total of 3 tied group(s) detected. CETIS applied a tie correction to the asymptotic normal approximation in cases where ties occurred across groups. Since Monte Carlo simulations can also effectively address ties, it is suggested that you re-analyze the data with Monte Carlo.
PC Code 122990 MRID 49822704 dietary concentration formulated product

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	< 1771	1771	n/a	

Jonckheere-Terpstra Step-Down Test

Control	vs	Control II	Test Stat	Critical	P-Type	P-Value	Decision(α :5%)
Negative Control	1771*	9	n/a		Exact	0.0500	Significant Effect
	3531*	27	n/a		Exact	6.0E-04	Significant Effect
	7063*	54	n/a		Exact	2.7E-06	Significant Effect
	14125*	84	n/a		Exact	5.1E-06	Significant Effect
	28262*	104	n/a		Exact	0.0022	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α :5%)
Between	570.001	114	5	0.9536	0.4824	Non-Significant Effect
Error	1434.55	119.546	12			
Total	2004.55		17			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α :1%)
Variances	Bartlett Equality of Variance Test	28.14	15.09	3.4E-05	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.7299	0.8546	1.8E-04	Non-Normal Distribution

Food Consumption Summary

Conc-mg ai/kg d	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	3	36.15	32.75	39.54	36.3	34.71	37.43	0.7889	3.78%	0.00%
1771		3	30.06	20.92	39.21	30.03	26.4	33.76	2.125	12.24%	16.83%
3531		3	25.32	24.01	26.63	25.35	24.78	25.83	0.3035	2.08%	29.95%
7063		3	23.23	20.02	26.45	23.49	21.83	24.38	0.7472	5.57%	35.72%
14125		3	21.93	11.27	32.59	22.92	17.23	25.64	2.477	19.56%	39.33%
28262		3	35.45	-29.4	100.3	27.33	14.37	64.65	15.07	73.64%	1.93%

Food Consumption Detail

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	36.3	37.43	34.71
1771		26.4	30.03	33.76
3531		25.83	25.35	24.78
7063		24.38	23.49	21.83
14125		17.23	22.92	25.64
28262		64.65	14.37	27.33

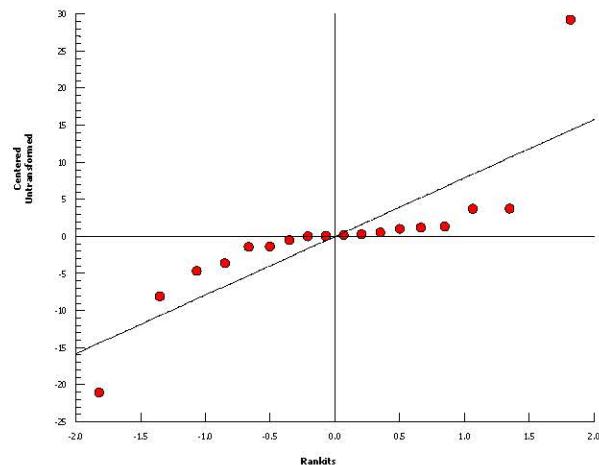
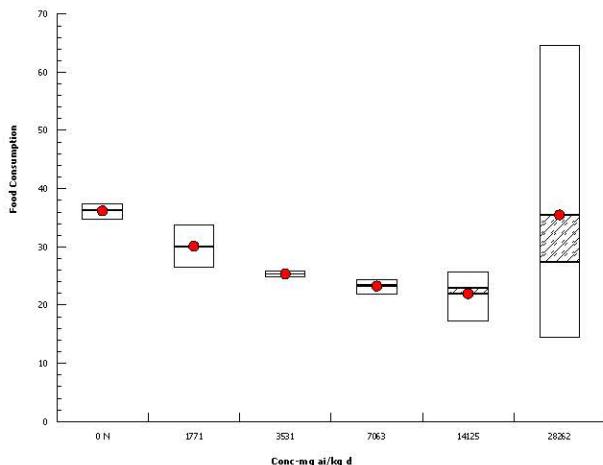
Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

BioChem Agrar

Analysis ID: 12-9291-1443 Endpoint: Food Consumption
Analyzed: 12 Dec-17 2:44 Analysis: Nonparametric-Control vs Ord. Treatments

CETIS Version: CETISv1.9.2
Official Results: Yes

Graphics



CETIS Analytical Report

Report Date: 12 Dec-17 02:45 (p 1 of 3)
 Test Code: 49822704 dc fm | 01-5606-7976

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

BioChem Agrar

Analysis ID: 06-3763-5361	Endpoint: 10-Day Mortality Rate	CETIS Version: CETISv1.9.2
Analyzed: 12 Dec-17 2:44	Analysis: Linear Regression (GLM)	Official Results: Yes
Batch ID: 17-5890-7037	Test Type: 2014 Honeybee Adult Chron Oral	Analyst:
Start Date: 11 Sep-13	Protocol: Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent: 50% w/v sucrose solution
Ending Date: 21 Sep-13	Species: Apis mellifera	Brine:
Duration: 10d 0h	Source: Bienenfarm Kern	Age:
Sample ID: 12-8203-0230	Code: 49822704	Client: CDM Smith - E. Krupka
Sample Date: 11 Sep-13	Material: Mesotrione	Project: Herbicide
Receipt Date: 30 Nov-17 20:44	Source: Syngenta	
Sample Age: n/a	Station:	

Comments:

'10-Day Mortality Rate' endpoint...

There are a total of 3 tied group(s) detected. CETIS applied a tie correction to the asymptotic normal approximation in cases where ties occurred across groups. Since Monte Carlo simulations can also effectively address ties, it is suggested that you re-analyze the data with Monte Carlo.
 PC Code 122990 MRID 49822704 dietary concentration formulated product

Linear Regression Options

Model Name	Link Function	Threshold Option	Thresh	Optimized	Pooled	Het Corr	Weighted
Log-Normal (Probit) $\eta = \text{inv } \Phi[\pi]$		Zero Threshold	0	No	No	Yes	Yes

Regression Summary

Iters	LL	AICc	BIC	Mu	Sigma	Adj R2	F Stat	Critical	P-Value	Decision($\alpha:5\%$)
5	-21.74	48.48	48.89	3.927	0.2432	0.998	1.087	3.708	0.3987	Non-Significant Lack of Fit

Point Estimates

Level	mg ai/kg	95% LCL	95% UCL
EC5	3364	2086	4439
EC10	4123	2769	5251
EC15	4729	3341	5901
EC20	5274	3868	6493
EC25	5791	4374	7067
EC40	7331	5871	8886
EC50	8449	6909	10340

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision($\alpha:5\%$)
Slope	4.113	0.5984	2.82	5.405	6.872	1.1E-05	Significant Parameter
Intercept	-16.15	2.354	-21.23	-11.06	-6.861	1.2E-05	Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)
Model	15670	15670	1	7161	<1.0E-37	Significant
Lack of Fit	6.993	2.331	3	1.087	0.3987	Non-Significant
Pure Error	21.45	2.145	10			
Residual	28.44	2.188	13			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision($\alpha:5\%$)
Goodness-of-Fit	Pearson Chi-Sq GOF Test	28.44	22.36	0.0079	Significant Heterogeneity
	Likelihood Ratio GOF Test	17.44	22.36	0.1801	Non-Significant Heterogeneity
Variances	Mod Levene Equality of Variance	0.7358	5.192	0.6056	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.8807	0.8815	0.0487	Non-Normal Distribution
	Anderson-Darling A2 Normality Te	0.8425	2.492	0.0299	Non-Normal Distribution

CETIS Analytical Report

Report Date: 12 Dec-17 02:45 (p 2 of 3)
Test Code: 49822704 dc fm | 01-5606-7976

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 06-3763-5361 **Endpoint:** 10-Day Mortality Rate
Analyzed: 12 Dec-17 2:44 **Analysis:** Linear Regression (GLM)

CETIS Version: CETISv1.9.2
Official Results: Yes

10-Day Mortality Rate Summary**Calculated Variate(A/B)**

Conc-mg ai/kg d	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
1771		3	0.0167	0.0000	0.0500	0.0167	0.0289	173.20%	0.0%	1	60
3531		3	0.0667	0.0500	0.1000	0.0167	0.0289	43.30%	5.09%	4	60
7063		3	0.3000	0.1500	0.4500	0.0866	0.1500	50.00%	28.81%	18	60
14125		3	0.8333	0.7000	0.9500	0.0727	0.1258	15.10%	83.05%	50	60
28262		3	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	100.0%	60	60

10-Day Mortality Rate Detail

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
1771		0.0000	0.0500	0.0000
3531		0.1000	0.0500	0.0500
7063		0.3000	0.4500	0.1500
14125		0.8500	0.7000	0.9500
28262		1.0000	1.0000	1.0000

10-Day Mortality Rate Binomials

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
1771		0/20	1/20	0/20
3531		2/20	1/20	1/20
7063		6/20	9/20	3/20
14125		17/20	14/20	19/20
28262		20/20	20/20	20/20

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

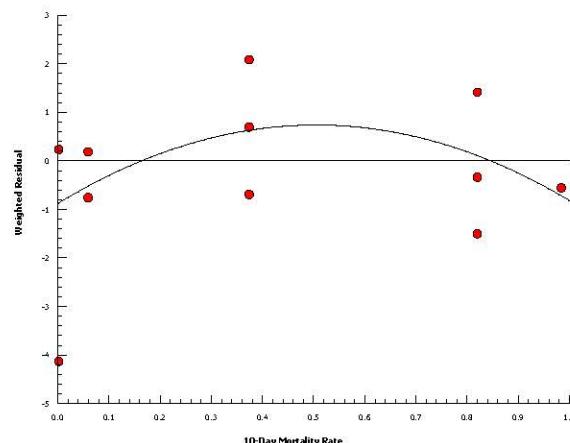
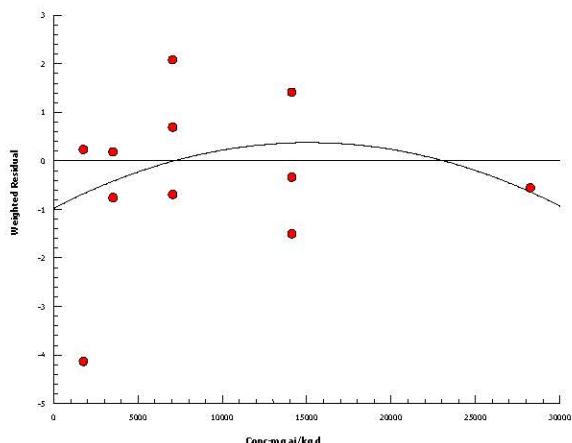
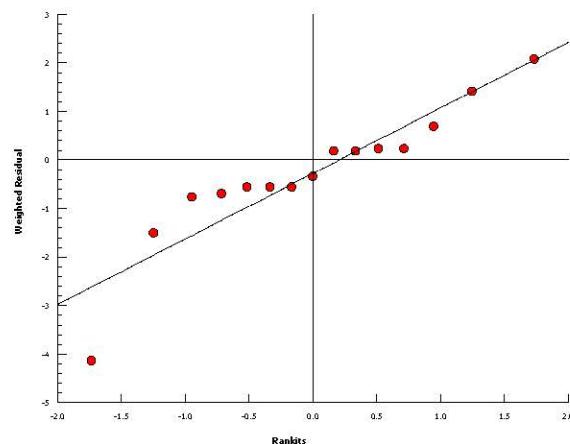
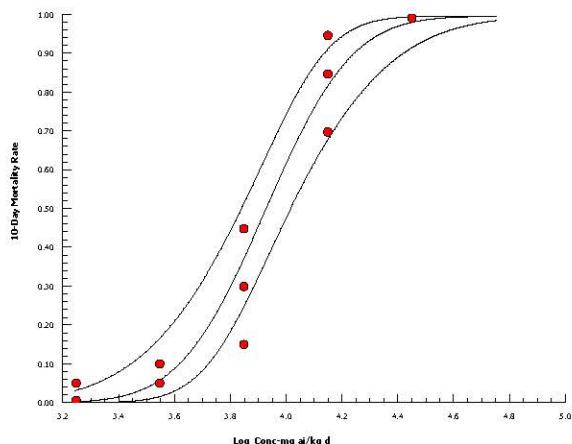
BioChem Agrar

 Analysis ID: 06-3763-5361
 Analyzed: 12 Dec-17 2:44

 Endpoint: 10-Day Mortality Rate
 Analysis: Linear Regression (GLM)

 CETIS Version: CETISv1.9.2
 Official Results: Yes

Graphics

Log-Normal: $\text{inv } \Phi[\pi] = \alpha + \beta \cdot \log[x]$ 

CETIS Analytical Report

Report Date: 12 Dec-17 02:46 (p 1 of 2)
Test Code: 49822704 dc fm | 01-5606-7976

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 13-6614-2587	Endpoint: Food Consumption	CETIS Version: CETISv1.9.2
Analyzed: 12 Dec-17 2:43	Analysis: Nonlinear Regression (NLR)	Official Results: Yes
Batch ID: 17-5890-7037	Test Type: 2014 Honeybee Adult Chron Oral	Analyst:
Start Date: 11 Sep-13	Protocol: Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent: 50% w/v sucrose solution
Ending Date: 21 Sep-13	Species: Apis mellifera	Brine:
Duration: 10d 0h	Source: Bienenfarm Kern	Age:
Sample ID: 12-8203-0230	Code: 49822704	Client: CDM Smith - E. Krupka
Sample Date: 11 Sep-13	Material: Mesotrione	Project: Herbicide
Receipt Date: 30 Nov-17 20:44	Source: Syngenta	
Sample Age: n/a	Station:	

Comments:

'10-Day Mortality Rate' endpoint...

There are a total of 3 tied group(s) detected. CETIS applied a tie correction to the asymptotic normal approximation in cases where ties occurred across groups. Since Monte Carlo simulations can also effectively address ties, it is suggested that you re-analyze the data with Monte Carlo.
PC Code 122990 MRID 49822704 dietary concentration formulated product

Non-Linear Regression Options

Model Name and Function		Weighting Function		PTBS Function		X Trans	Y Trans
3P Cum Log-Normal (Probit): $\mu = \alpha \cdot [1 - \Phi(\log[x/\delta]/\gamma)]$		Normal [$\omega=1$]		Off [$\mu^*=\mu$]		None	None

Regression Summary

Iters	Log LL	AICc	BIC	Adj R2	Optimize	F Stat	Critical	P-Value	Decision($\alpha:5\%$)
23	-45.21	98.14	99.1		Yes	3.204	3.49	0.0621	Non-Significant Lack of Fit

Point Estimates

Level	mg ai/kg	95% LCL	95% UCL
EC5	0.0000000	n/a	n/a
EC10	0.0001703	n/a	n/a
EC15	0.07318	n/a	n/a
EC20	9.061	n/a	n/a
EC25	565.7	n/a	1.24E+18
EC40	18910000	n/a	n/a
EC50	99610000	n/a	n/a
EC90	5.826E+23	n/a	n/a

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision($\alpha:5\%$)
α	36.32	7.577	20.17	52.47	4.794	2.4E-04	Significant Parameter
γ	24.74	172.7	-343.4	392.8	0.1432	0.8880	Non-Significant Parameter
δ	9.96E+09	9.83E+11	-2.1E+12	2.11E+12	0.01014	0.9920	Non-Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)
Model	14240	4746	3	27.56	2.4E-06	Significant
Lack of Fit	1149	383	3	3.204	0.0621	Non-Significant
Pure Error	1435	119.5	12			
Residual	2583	172.2	15			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision($\alpha:5\%$)
Variances	Mod Levene Equality of Variance	3.576	4.387	0.0762	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.6609	0.8965	2.9E-05	Non-Normal Distribution
	Anderson-Darling A2 Normality Te	2.273	2.492	<1.0E-37	Non-Normal Distribution

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

BioChem Agrar

Analysis ID: 13-8614-2587 Endpoint: Food Consumption
 Analyzed: 12 Dec-17 2:43 Analysis: Nonlinear Regression (NLR)

CETIS Version: CETISv1.9.2
 Official Results: Yes

Food Consumption Summary

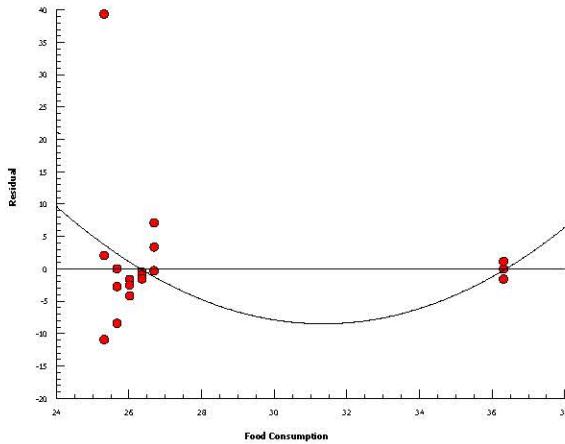
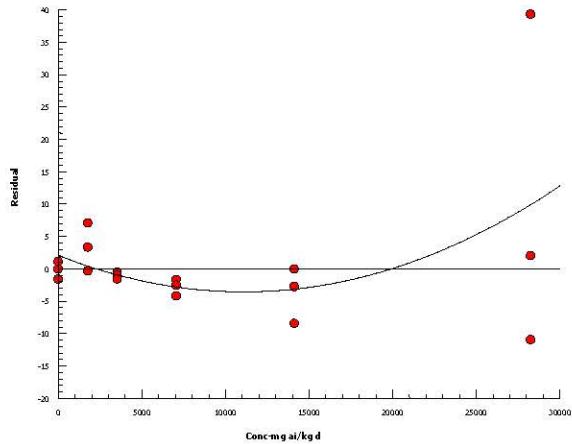
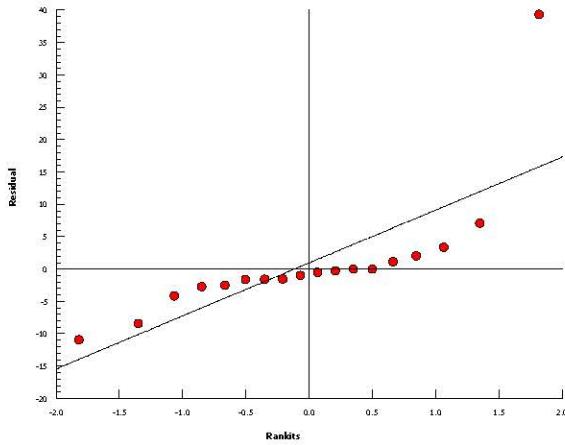
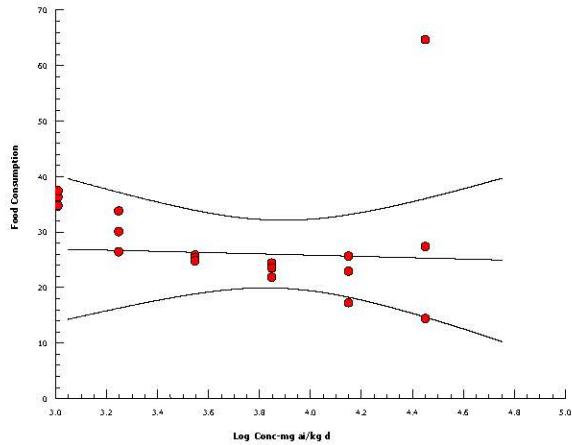
Calculated Variate

Conc-mg ai/kg d	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	3	36.15	34.71	37.43	0.7889	1.366	3.78%	0.0%
1771		3	30.06	26.4	33.76	2.125	3.68	12.24%	16.83%
3531		3	25.32	24.78	25.83	0.3035	0.5256	2.08%	29.95%
7063		3	23.23	21.83	24.38	0.7472	1.294	5.57%	35.72%
14125		3	21.93	17.23	25.64	2.477	4.29	19.56%	39.33%
28262		3	35.45	14.37	64.65	15.07	26.11	73.64%	1.93%

Food Consumption Detail

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	36.3	37.43	34.71
1771		26.4	30.03	33.76
3531		25.83	25.35	24.78
7063		24.38	23.49	21.83
14125		17.23	22.92	25.64
28262		64.65	14.37	27.33

Graphics

Model: 3P Cum Log-Normal (Probit): $\mu = \alpha [1 - \Phi[\log[x/\delta]/\gamma]]$ Distribution: Normal [$\omega=1$]

CETIS Analytical Report

Report Date: 12 Dec-17 02:46 (p 1 of 2)
Test Code: 49822704 dc fm | 01-5606-7976

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 14-5610-2562	Endpoint: 10-Day Mortality Rate	CETIS Version: CETISv1.9.2
Analyzed: 12 Dec-17 2:44	Analysis: Trimmed Spearman-Kärber	Official Results: Yes
Batch ID: 17-5890-7037	Test Type: 2014 Honeybee Adult Chron Oral	Analyst:
Start Date: 11 Sep-13	Protocol: Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent: 50% w/v sucrose solution
Ending Date: 21 Sep-13	Species: Apis mellifera	Brine:
Duration: 10d 0h	Source: Bienenfarm Kern	Age:
Sample ID: 12-8203-0230	Code: 49822704	Client: CDM Smith - E. Krupka
Sample Date: 11 Sep-13	Material: Mesotrione	Project: Herbicide
Receipt Date: 30 Nov-17 20:44	Source: Syngenta	
Sample Age: n/a	Station:	

Comments:

'10-Day Mortality Rate' endpoint...

There are a total of 3 tied group(s) detected. CETIS applied a tie correction to the asymptotic normal approximation in cases where ties occurred across groups. Since Monte Carlo simulations can also effectively address ties, it is suggested that you re-analyze the data with Monte Carlo.

PC Code 122990 MRID 49822704 dietary concentration formulated product

Trimmed Spearman-Kärber Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0	1.67%	3.94	0.02586	8712	7734	9813

10-Day Mortality Rate Summary**Calculated Variate(A/B)**

Conc-mg ai/kg d	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	N	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0%	0	60	
1771		3	0.0167	0.0000	0.0500	0.0167	0.0289	173.20%	1.67%	1	60
3531		3	0.0667	0.0500	0.1000	0.0167	0.0289	43.30%	6.67%	4	60
7063		3	0.3000	0.1500	0.4500	0.0866	0.1500	50.00%	30.0%	18	60
14125		3	0.8333	0.7000	0.9500	0.0727	0.1258	15.10%	83.33%	50	60
28262		3	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	100.0%	60	60

10-Day Mortality Rate Detail

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	0.0000	0.0000	0.0000
1771		0.0000	0.0500	0.0000
3531		0.1000	0.0500	0.0500
7063		0.3000	0.4500	0.1500
14125		0.8500	0.7000	0.9500
28262		1.0000	1.0000	1.0000

10-Day Mortality Rate Binomials

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	0/20	0/20	0/20
1771		0/20	1/20	0/20
3531		2/20	1/20	1/20
7063		6/20	9/20	3/20
14125		17/20	14/20	19/20
28262		20/20	20/20	20/20

CETIS Analytical Report

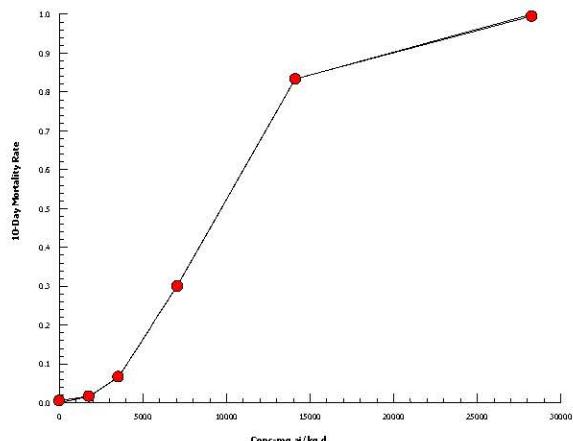
Report Date: 12 Dec-17 02:46 (p 2 of 2)
Test Code: 49822704 dc fm | 01-5606-7976

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 14-5610-2562
Analyzed: 12 Dec-17 2:44

Endpoint: 10-Day Mortality Rate
Analysis: Trimmed Spearman-Kärber

CETIS Version: CETISv1.9.2
Official Results: Yes

Graphics

CETIS Summary Report

Report Date: 12 Dec-17 02:46 (p 1 of 2)
Test Code: 49822704 dc fm | 01-5606-7976

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Batch ID:	17-5890-7037	Test Type:	2014 Honeybee Adult Chron Oral	Analyst:	
Start Date:	11 Sep-13	Protocol:	Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent:	50% w/v sucrose solution
Ending Date:	21 Sep-13	Species:	Apis mellifera	Brine:	
Duration:	10d 0h	Source:	Bienenfarm Kern	Age:	
Sample ID:	12-8203-0230	Code:	49822704	Client:	CDM Smith - E. Krupka
Sample Date:	11 Sep-13	Material:	Mesotrione	Project:	Herbicide
Receipt Date:	30 Nov-17 20:44	Source:	Syngenta		
Sample Age:	n/a	Station:			

Comments:

'10-Day Mortality Rate' endpoint...

There are a total of 3 tied group(s) detected. CETIS applied a tie correction to the asymptotic normal approximation in cases where ties occurred across groups. Since Monte Carlo simulations can also effectively address ties, it is suggested that you re-analyze the data with Monte Carlo.

PC Code 122990 MRID 49822704 dietary concentration formulated product

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD	✓
19-5174-0508	10-Day Mortality Rate	Jonckheere-Terpstra Step-Down Test	1771	3531	2501		n/a	
09-3899-8183	10-Day Mortality Rate	Mann-Whitney U Two-Sample Test	1771	3531	2501		14.2%	
12-9291-1443	Food Consumption	Jonckheere-Terpstra Step-Down Test	< 1771	1771	n/a		n/a	✓
12-2055-8299	Food Consumption	Mann-Whitney U Two-Sample Test	< 1771	1771	n/a		52.7%	✓

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	mg ai/kg	95% LCL	95% UCL	TU	✓
06-3763-5361	10-Day Mortality Rate	Regression: Log-Normal (Probit)	EC5	3364	2086	4439		
			EC10	4123	2769	5251		
			EC15	4729	3341	5901		
			EC20	5274	3868	6493		
			EC25	5791	4374	7067		
			EC40	7331	5871	8886		✓
			EC50	8449	6909	10340		✓
14-5610-2562	10-Day Mortality Rate	Trimmed Spearman-Kärber	EC50	8712	7734	9813		
13-6614-2587	Food Consumption	Regression: 3P Cum Log-Normal (Probit)	EC5	0.0000000	n/a	n/a		✓
			EC10	0.0001703	n/a	n/a		✓
			EC15	0.07318	n/a	n/a		✓
			EC20	9.061	n/a	n/a		✓
			EC25	565.7	n/a	1.24E+18		✓
			EC40	18910000	n/a	n/a		
			EC50	99610000	n/a	n/a		
			EC90	5.826E+23	n/a	n/a		

10-Day Mortality Rate Summary

Conc-mg ai/kg d	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00%	
1771		3	0.0167	0.0000	0.0884	0.0000	0.0500	0.0167	0.0289	173.21%	1.67%
3531		3	0.0667	0.0000	0.1384	0.0500	0.1000	0.0167	0.0289	43.30%	6.67%
7063		3	0.3000	0.0000	0.6726	0.1500	0.4500	0.0866	0.1500	50.00%	30.00%
14125		3	0.8333	0.5208	1.0000	0.7000	0.9500	0.0727	0.1258	15.10%	83.33%
28262		3	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	100.00%

Food Consumption Summary

Conc-mg ai/kg d	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	3	36.15	32.75	39.54	34.71	37.43	0.7889	1.366	3.78%	0.00%
1771		3	30.06	20.92	39.21	26.4	33.76	2.125	3.68	12.24%	16.83%
3531		3	25.32	24.01	26.63	24.78	25.83	0.3035	0.5256	2.08%	29.95%
7063		3	23.23	20.02	26.45	21.83	24.38	0.7472	1.294	5.57%	35.72%
14125		3	21.93	11.27	32.59	17.23	25.64	2.477	4.29	19.56%	39.33%
28262		3	35.45	-29.4	100.3	14.37	64.65	15.07	26.11	73.64%	1.93%

CETIS Summary ReportReport Date: 12 Dec-17 02:46 (p 2 of 2)
Test Code: 49822704 dc fm | 01-5606-7976**Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study****BioChem Agrar****10-Day Mortality Rate Detail**

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	0.0000	0.0000	0.0000
1771		0.0000	0.0500	0.0000
3531		0.1000	0.0500	0.0500
7063		0.3000	0.4500	0.1500
14125		0.8500	0.7000	0.9500
28262		1.0000	1.0000	1.0000

Food Consumption Detail

Conc-mg ai/kg d	Code	Rep 1	Rep 2	Rep 3
0	N	36.3	37.43	34.71
1771		26.4	30.03	33.76
3531		25.83	25.35	24.78
7063		24.38	23.49	21.83
14125		17.23	22.92	25.64
28262		64.65	14.37	27.33

CETIS Analytical Report

Report Date: 14 Dec-17 20:01 (p 1 of 3)
Test Code: 49822704 dd ai | 17-7177-2040

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 06-7187-8937	Endpoint: 10-Day Mortality Rate	CETIS Version: CETISv1.9.2
Analyzed: 14 Dec-17 19:52	Analysis: Linear Regression (GLM)	Official Results: Yes
Batch ID: 05-1297-1143	Test Type: 2014 Honeybee Adult Chron Oral	Analyst:
Start Date: 11 Sep-13	Protocol: Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent: 50% w/v sucrose solution
Ending Date: 21 Sep-13	Species: Apis mellifera	Brine:
Duration: 10d 0h	Source: Bienenfarm Kern	Age:
Sample ID: 14-3341-8821	Code: 49822704	Client: CDM Smith - E. Krupka
Sample Date: 11 Sep-13	Material: Mesotrione	Project: Herbicide
Receipt Date: 01 Dec-17 00:32	Source: Syngenta	
Sample Age: n/a	Station:	

Comments:

'10-Day Mortality Rate' endpoint...

There are a total of 3 tied group(s) detected. CETIS applied a tie correction to the asymptotic normal approximation in cases where ties occurred across groups. Since Monte Carlo simulations can also effectively address ties, it is suggested that you re-analyze the data with Monte Carlo PC Code 122990 MRID 49822704 dietary dose active ingredient

Linear Regression Options

Model Name	Link Function	Threshold Option	Thresh	Optimized	Pooled	Het Corr	Weighted
Log-Normal (Probit) $\eta = \text{inv } \Phi[\pi]$		Zero Threshold	0	No	No	No	Yes

Regression Summary

Iters	LL	AICc	BIC	Mu	Sigma	Adj R2	F Stat	Critical	P-Value	Decision($\alpha:5\%$)
5	-19.43	43.86	44.27	1.284	0.2508	0.9969	0.2347	3.708	0.8702	Non-Significant Lack of Fit

Point Estimates

Level	ug/bee/da	95% LCL	95% UCL
EC5	7.431	5.779	8.889
EC10	9.166	7.451	10.69
EC15	10.56	8.817	12.14
EC20	11.82	10.05	13.47
EC25	13.01	11.23	14.76
EC40	16.6	14.63	18.82
EC50	19.21	16.98	22.02

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision($\alpha:5\%$)
Slope	3.988	0.4214	3.162	4.814	9.462	3.4E-07	Significant Parameter
Intercept	-5.118	0.526	-6.149	-4.087	-9.73	2.5E-07	Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)
Model	4848	4848	1	4524	<1.0E-37	Significant
Lack of Fit	0.9163	0.3054	3	0.2347	0.8702	Non-Significant
Pure Error	13.01	1.301	10			
Residual	13.93	1.072	13			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision($\alpha:5\%$)
Goodness-of-Fit	Pearson Chi-Sq GOF Test	13.93	22.36	0.3787	Non-Significant Heterogeneity
	Likelihood Ratio GOF Test	12.82	22.36	0.4620	Non-Significant Heterogeneity
Variances	Mod Levene Equality of Variance	1.175	5.192	0.4219	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9559	0.8815	0.6219	Normal Distribution
	Anderson-Darling A2 Normality Te	0.4483	2.492	0.2830	Normal Distribution

CETIS Analytical Report

Report Date: 14 Dec-17 20:01 (p 2 of 3)
Test Code: 49822704 dd ai | 17-7177-2040

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 06-7187-8937 **Endpoint:** 10-Day Mortality Rate
Analyzed: 14 Dec-17 19:52 **Analysis:** Linear Regression (GLM)

CETIS Version: CETISv1.9.2
Official Results: Yes

10-Day Mortality Rate Summary**Calculated Variate(A/B)**

Conc-ug/bee/day	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
4.8		3	0.0167	0.0000	0.0500	0.0167	0.0289	173.20%	0.0%	1	60
8.1		3	0.0667	0.0500	0.1000	0.0167	0.0289	43.30%	5.09%	4	60
14.9		3	0.3000	0.1500	0.4500	0.0866	0.1500	50.00%	28.81%	18	60
32.6		3	0.8333	0.7000	0.9500	0.0727	0.1258	15.10%	83.05%	50	60
113		3	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	100.0%	60	60

10-Day Mortality Rate Detail

Conc-ug/bee/day	Code	Rep 1	Rep 2	Rep 3
4.8		0.0000	0.0500	0.0000
8.1		0.1000	0.0500	0.0500
14.9		0.3000	0.4500	0.1500
32.6		0.8500	0.7000	0.9500
113		1.0000	1.0000	1.0000

10-Day Mortality Rate Binomials

Conc-ug/bee/day	Code	Rep 1	Rep 2	Rep 3
4.8		0/20	1/20	0/20
8.1		2/20	1/20	1/20
14.9		6/20	9/20	3/20
32.6		17/20	14/20	19/20
113		20/20	20/20	20/20

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

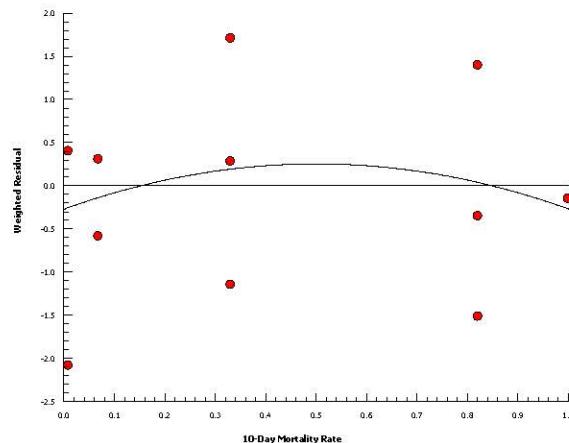
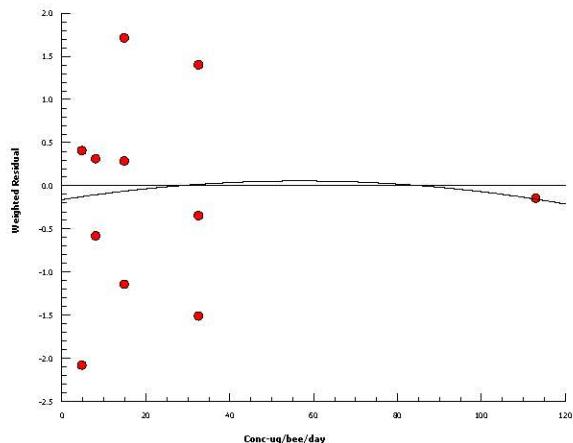
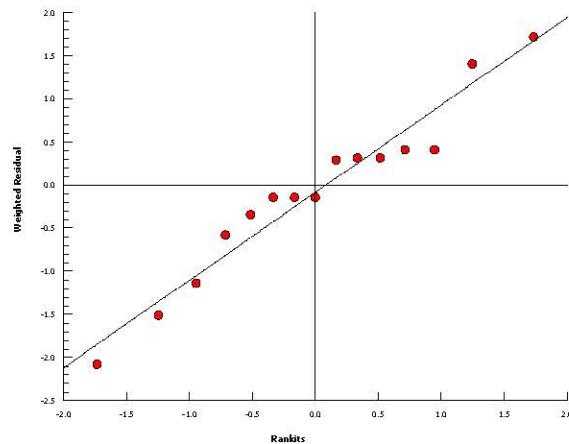
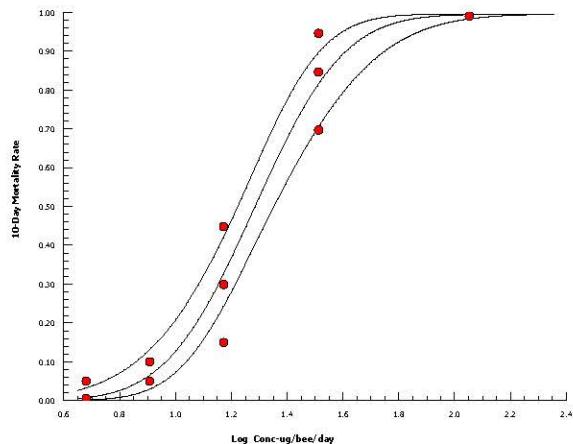
BioChem Agrar

 Analysis ID: 06-7187-8937
 Analyzed: 14 Dec-17 19:52

 Endpoint: 10-Day Mortality Rate
 Analysis: Linear Regression (GLM)

 CETIS Version: CETISv1.9.2
 Official Results: Yes

Graphics

Log-Normal: $\text{inv } \Phi[\pi] = \alpha + \beta \cdot \log[x]$ 

CETIS Analytical Report

Report Date: 14 Dec-17 20:01 (p 1 of 2)
Test Code: 49822704 dd ai | 17-7177-2040

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 19-9002-0404	Endpoint: Food Consumption	CETIS Version: CETISv1.9.2
Analyzed: 14 Dec-17 19:51	Analysis: Nonlinear Regression (NLR)	Official Results: Yes
Batch ID: 05-1297-1143	Test Type: 2014 Honeybee Adult Chron Oral	Analyst:
Start Date: 11 Sep-13	Protocol: Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent: 50% w/v sucrose solution
Ending Date: 21 Sep-13	Species: Apis mellifera	Brine:
Duration: 10d 0h	Source: Bienenfarm Kern	Age:
Sample ID: 14-3341-8821	Code: 49822704	Client: CDM Smith - E. Krupka
Sample Date: 11 Sep-13	Material: Mesotrione	Project: Herbicide
Receipt Date: 01 Dec-17 00:32	Source: Syngenta	
Sample Age: n/a	Station:	

Comments:

'10-Day Mortality Rate' endpoint...

There are a total of 3 tied group(s) detected. CETIS applied a tie correction to the asymptotic normal approximation in cases where ties occurred across groups. Since Monte Carlo simulations can also effectively address ties, it is suggested that you re-analyze the data with Monte Carlo
PC Code 122990 MRID 49822704 dietary dose active ingredient

Non-Linear Regression Options

Model Name and Function		Weighting Function		PTBS Function		X Trans	Y Trans
3P Cum Log-Normal (Probit): $\mu = \alpha \cdot [1 - \Phi(\log[x/\delta]/\gamma)]$		Normal [$\omega=1$]		Off [$\mu^*=\mu$]		None	None

Regression Summary

Iters	Log LL	AICc	BIC	Adj R2	Optimize	F Stat	Critical	P-Value	Decision($\alpha:5\%$)
23	-45.82	99.36	100.3		Yes	3.709	3.49	0.0426	Significant Lack of Fit

Point Estimates

Level	ug/bee/da	95% LCL	95% UCL
EC5	1.211E-16	n/a	n/a
EC10	0.0000000	n/a	n/a
EC15	0.0000004	n/a	n/a
EC20	0.0005484	n/a	n/a
EC25	0.2358	n/a	n/a
EC40	1019000	n/a	n/a
EC50	10000000	n/a	n/a
EC90	1.558E+30	n/a	n/a

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision($\alpha:5\%$)
α	36.35	7.838	19.65	53.06	4.638	3.2E-04	Significant Parameter
γ	36.28	332.8	-673	745.6	0.109	0.9146	Non-Significant Parameter
δ	1E+10	1.84E+12	-3.9E+12	3.94E+12	0.005426	0.9957	Non-Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)
Model	14060	4686	3	25.42	3.9E-06	Significant
Lack of Fit	1330	443.4	3	3.709	0.0426	Significant
Pure Error	1435	119.5	12			
Residual	2765	184.3	15			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision($\alpha:5\%$)
Variances	Mod Levene Equality of Variance	3.576	4.387	0.0762	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.6726	0.8965	3.9E-05	Non-Normal Distribution
	Anderson-Darling A2 Normality Te	2.149	2.492	<1.0E-37	Non-Normal Distribution

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

BioChem Agrar

Analysis ID: 19-9002-0404 Endpoint: Food Consumption
 Analyzed: 14 Dec-17 19:51 Analysis: Nonlinear Regression (NLR)

CETIS Version: CETISv1.9.2
 Official Results: Yes

Food Consumption Summary

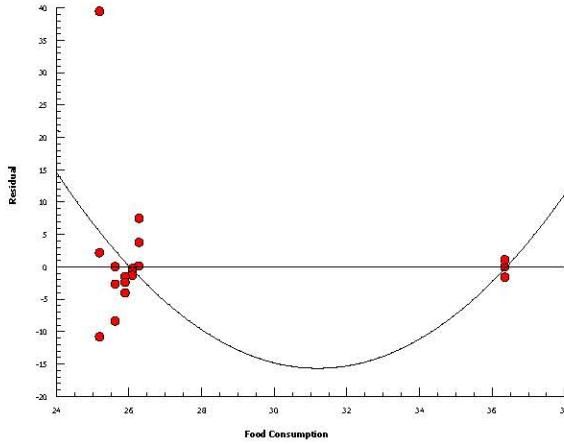
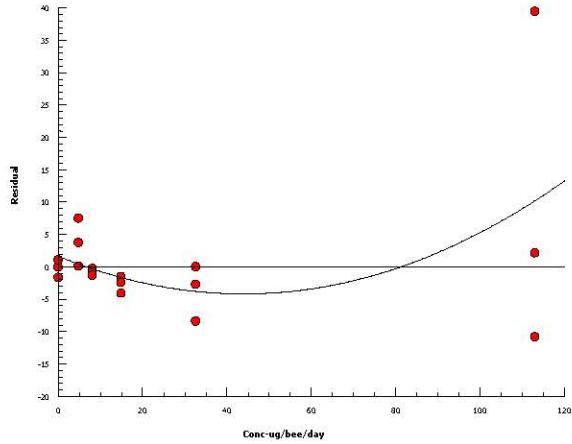
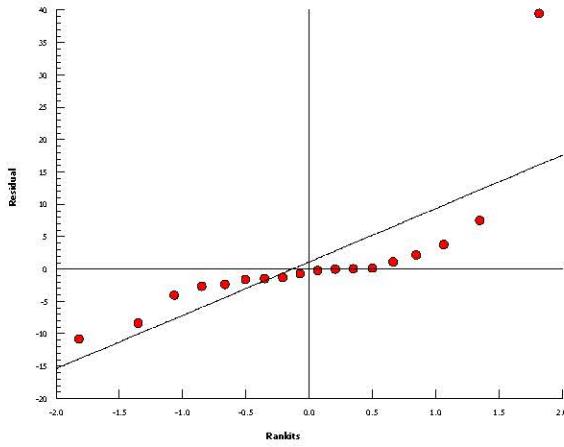
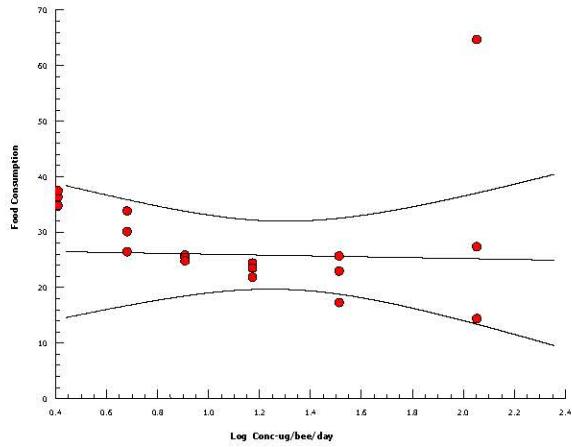
Calculated Variate

Conc-ug/bee/day	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	3	36.15	34.71	37.43	0.7889	1.366	3.78%	0.0%
4.8		3	30.06	26.4	33.76	2.125	3.68	12.24%	16.83%
8.1		3	25.32	24.78	25.83	0.3035	0.5256	2.08%	29.95%
14.9		3	23.23	21.83	24.38	0.7472	1.294	5.57%	35.72%
32.6		3	21.93	17.23	25.64	2.477	4.29	19.56%	39.33%
113		3	35.45	14.37	64.65	15.07	26.11	73.64%	1.93%

Food Consumption Detail

Conc-ug/bee/day	Code	Rep 1	Rep 2	Rep 3
0	N	36.3	37.43	34.71
4.8		26.4	30.03	33.76
8.1		25.83	25.35	24.78
14.9		24.38	23.49	21.83
32.6		17.23	22.92	25.64
113		64.65	14.37	27.33

Graphics

Model: 3P Cum Log-Normal (Probit): $\mu = \alpha [1 - \Phi[\log[x/\delta]/\gamma]]$ Distribution: Normal [$\omega=1$]

CETIS Analytical Report

Report Date: 14 Dec-17 20:02 (p 1 of 2)
Test Code: 49822704 dd ai | 17-7177-2040

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 05-6227-5773	Endpoint: 10-Day Mortality Rate	CETIS Version: CETISv1.9.2
Analyzed: 14 Dec-17 19:52	Analysis: Trimmed Spearman-Kärber	Official Results: Yes
Batch ID: 05-1297-1143	Test Type: 2014 Honeybee Adult Chron Oral	Analyst:
Start Date: 11 Sep-13	Protocol: Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent: 50% w/v sucrose solution
Ending Date: 21 Sep-13	Species: Apis mellifera	Brine:
Duration: 10d 0h	Source: Bienenfarm Kern	Age:
Sample ID: 14-3341-8821	Code: 49822704	Client: CDM Smith - E. Krupka
Sample Date: 11 Sep-13	Material: Mesotrione	Project: Herbicide
Receipt Date: 01 Dec-17 00:32	Source: Syngenta	
Sample Age: n/a	Station:	

Comments:

'10-Day Mortality Rate' endpoint...

There are a total of 3 tied group(s) detected. CETIS applied a tie correction to the asymptotic normal approximation in cases where ties occurred across groups. Since Monte Carlo simulations can also effectively address ties, it is suggested that you re-analyze the data with Monte Carlo PC Code 122990 MRID 49822704 dietary dose active ingredient

Trimmed Spearman-Kärber Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0	1.67%	1.306	0.02978	20.23	17.63	23.2

10-Day Mortality Rate Summary**Calculated Variate(A/B)**

Conc-ug/bee/day	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	N	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0%	0	60	
4.8		3	0.0167	0.0000	0.0500	0.0167	0.0289	173.20%	1.67%	1	60
8.1		3	0.0667	0.0500	0.1000	0.0167	0.0289	43.30%	6.67%	4	60
14.9		3	0.3000	0.1500	0.4500	0.0866	0.1500	50.00%	30.0%	18	60
32.6		3	0.8333	0.7000	0.9500	0.0727	0.1258	15.10%	83.33%	50	60
113		3	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	100.0%	60	60

10-Day Mortality Rate Detail

Conc-ug/bee/day	Code	Rep 1	Rep 2	Rep 3
0	N	0.0000	0.0000	0.0000
4.8		0.0000	0.0500	0.0000
8.1		0.1000	0.0500	0.0500
14.9		0.3000	0.4500	0.1500
32.6		0.8500	0.7000	0.9500
113		1.0000	1.0000	1.0000

10-Day Mortality Rate Binomials

Conc-ug/bee/day	Code	Rep 1	Rep 2	Rep 3
0	N	0/20	0/20	0/20
4.8		0/20	1/20	0/20
8.1		2/20	1/20	1/20
14.9		6/20	9/20	3/20
32.6		17/20	14/20	19/20
113		20/20	20/20	20/20

CETIS Analytical Report

Report Date: 14 Dec-17 20:02 (p 2 of 2)
Test Code: 49822704 dd ai | 17-7177-2040

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 05-6227-5773

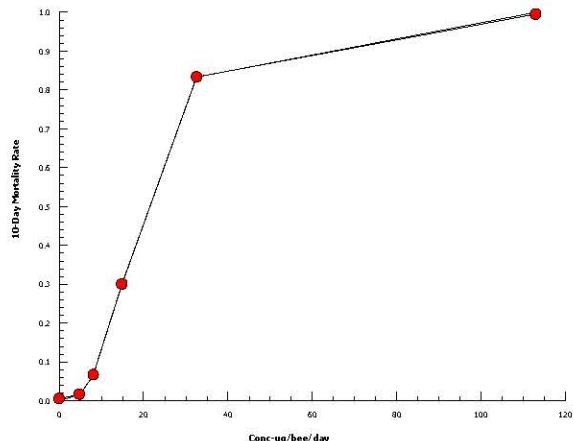
Endpoint: 10-Day Mortality Rate

CETIS Version: CETISv1.9.2

Analyzed: 14 Dec-17 19:52

Analysis: Trimmed Spearman-Kärber

Official Results: Yes

Graphics

CETIS Summary Report

Report Date: 14 Dec-17 20:02 (p 1 of 2)
Test Code: 49822704 dd ai | 17-7177-2040

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Batch ID:	05-1297-1143	Test Type:	2014 Honeybee Adult Chron Oral	Analyst:	
Start Date:	11 Sep-13	Protocol:	Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent:	50% w/v sucrose solution
Ending Date:	21 Sep-13	Species:	Apis mellifera	Brine:	
Duration:	10d 0h	Source:	Bienenfarm Kern	Age:	
Sample ID:	14-3341-8821	Code:	49822704	Client:	CDM Smith - E. Krupka
Sample Date:	11 Sep-13	Material:	Mesotrione	Project:	Herbicide
Receipt Date:	01 Dec-17 00:32	Source:	Syngenta		
Sample Age:	n/a	Station:			

Comments:

'10-Day Mortality Rate' endpoint...

There are a total of 3 tied group(s) detected. CETIS applied a tie correction to the asymptotic normal approximation in cases where ties occurred across groups. Since Monte Carlo simulations can also effectively address ties, it is suggested that you re-analyze the data with Monte Carlo

PC Code 122990 MRID 49822704 dietary dose active ingredient

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	ug/bee/da	95% LCL	95% UCL	TU	✓
06-7187-8937	10-Day Mortality Rate	Regression: Log-Normal (Probit)	EC5	7.431	5.779	8.889		
			EC10	9.166	7.451	10.69		
			EC15	10.56	8.817	12.14		
			EC20	11.82	10.05	13.47		
			EC25	13.01	11.23	14.76		
			EC40	16.6	14.63	18.82	✓	
			EC50	19.21	16.98	22.02	✓	
05-6227-5773	10-Day Mortality Rate	Trimmed Spearman-Kärber	EC50	20.23	17.63	23.2		
19-9002-0404	Food Consumption	Regression: 3P Cum Log-Normal (Probit)	EC5	1.211E-16	n/a	n/a	✓	
			EC10	0.0000000	n/a	n/a	✓	
			EC15	0.0000004	n/a	n/a	✓	
			EC20	0.0005484	n/a	n/a	✓	
			EC25	0.2358	n/a	n/a	✓	
			EC40	1019000	n/a	n/a		
			EC50	10000000	n/a	n/a		
			EC90	1.558E+30	n/a	n/a		

10-Day Mortality Rate Summary

Conc-ug/bee/day	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00%
4.8		3	0.0167	0.0000	0.0884	0.0000	0.0500	0.0167	0.0289	173.21%	1.67%
8.1		3	0.0667	0.0000	0.1384	0.0500	0.1000	0.0167	0.0289	43.30%	6.67%
14.9		3	0.3000	0.0000	0.6726	0.1500	0.4500	0.0866	0.1500	50.00%	30.00%
32.6		3	0.8333	0.5208	1.0000	0.7000	0.9500	0.0727	0.1258	15.10%	83.33%
113		3	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	100.00%

Food Consumption Summary

Conc-ug/bee/day	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	3	36.15	32.75	39.54	34.71	37.43	0.7889	1.366	3.78%	0.00%
4.8		3	30.06	20.92	39.21	26.4	33.76	2.125	3.68	12.24%	16.83%
8.1		3	25.32	24.01	26.63	24.78	25.83	0.3035	0.5256	2.08%	29.95%
14.9		3	23.23	20.02	26.45	21.83	24.38	0.7472	1.294	5.57%	35.72%
32.6		3	21.93	11.27	32.59	17.23	25.64	2.477	4.29	19.56%	39.33%
113		3	35.45	-29.4	100.3	14.37	64.65	15.07	26.11	73.64%	1.93%

CETIS Summary ReportReport Date: 14 Dec-17 20:02 (p 2 of 2)
Test Code: 49822704 dd ai | 17-7177-2040**Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study****BioChem Agrar****10-Day Mortality Rate Detail**

Conc-ug/bee/day	Code	Rep 1	Rep 2	Rep 3
0	N	0.0000	0.0000	0.0000
4.8		0.0000	0.0500	0.0000
8.1		0.1000	0.0500	0.0500
14.9		0.3000	0.4500	0.1500
32.6		0.8500	0.7000	0.9500
113		1.0000	1.0000	1.0000

Food Consumption Detail

Conc-ug/bee/day	Code	Rep 1	Rep 2	Rep 3
0	N	36.3	37.43	34.71
4.8		26.4	30.03	33.76
8.1		25.83	25.35	24.78
14.9		24.38	23.49	21.83
32.6		17.23	22.92	25.64
113		64.65	14.37	27.33

CETIS Analytical Report

Report Date: 14 Dec-17 19:56 (p 1 of 3)
 Test Code: 49822704 dd fm | 09-6583-7029

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

BioChem Agrar

Analysis ID:	08-2770-7642	Endpoint:	10-Day Mortality Rate	CETIS Version:	CETISv1.9.2
Analyzed:	14 Dec-17 19:32	Analysis:	Linear Regression (GLM)	Official Results:	Yes
Batch ID:	11-4710-5888	Test Type:	2014 Honeybee Adult Chron Oral	Analyst:	
Start Date:	11 Sep-13	Protocol:	Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent:	50% w/v sucrose solution
Ending Date:	21 Sep-13	Species:	Apis mellifera	Brine:	
Duration:	10d 0h	Source:	Bienenfarm Kern	Age:	
Sample ID:	16-5722-9681	Code:	49822704	Client:	CDM Smith - E. Krupka
Sample Date:	11 Sep-13	Material:	Mesotrione	Project:	Herbicide
Receipt Date:	01 Dec-17 00:32	Source:	Syngenta	Station:	
Sample Age:	n/a				

Comments:

'10-Day Mortality Rate' endpoint...

There are a total of 3 tied group(s) detected. CETIS applied a tie correction to the asymptotic normal approximation in cases where ties occurred across groups. Since Monte Carlo simulations can also effectively address ties, it is suggested that you re-analyze the data with Monte Carlo.
 PC Code 122990 MRID 49822704 dietary dose formulation

Linear Regression Options

Model Name	Link Function	Threshold Option	Thresh	Optimized	Pooled	Het Corr	Weighted
Log-Normal (Probit)	$\eta = \text{inv } \Phi[\pi]$	Zero Threshold	0	No	No	No	Yes

Regression Summary

Iters	LL	AICc	BIC	Mu	Sigma	Adj R2	F Stat	Critical	P-Value	Decision($\alpha:5\%$)
5	-19.42	43.84	44.25	2.325	0.2509	0.9969	0.2285	3.708	0.8745	Non-Significant Lack of Fit

Point Estimates

Level	ug/bee/da	95% LCL	95% UCL
EC5	81.76	63.6	97.8
EC10	100.9	82	117.6
EC15	116.2	97.03	133.6
EC20	130	110.6	148.2
EC25	143.2	123.5	162.4
EC40	182.7	161	207.2
EC50	211.5	186.9	242.4

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision($\alpha:5\%$)
Slope	3.986	0.421	3.161	4.811	9.467	3.4E-07	Significant Parameter
Intercept	-9.268	0.9588	-11.15	-7.389	-9.666	2.7E-07	Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)
Model	4762	4762	1	4475	<1.0E-37	Significant
Lack of Fit	0.8873	0.2958	3	0.2285	0.8745	Non-Significant
Pure Error	12.95	1.295	10			
Residual	13.83	1.064	13			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision($\alpha:5\%$)
Goodness-of-Fit	Pearson Chi-Sq GOF Test	13.83	22.36	0.3856	Non-Significant Heterogeneity
	Likelihood Ratio GOF Test	12.8	22.36	0.4637	Non-Significant Heterogeneity
Variances	Mod Levene Equality of Variance	1.186	5.192	0.4181	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9564	0.8815	0.6305	Normal Distribution
	Anderson-Darling A2 Normality Te	0.4427	2.492	0.2917	Normal Distribution

CETIS Analytical Report

Report Date: 14 Dec-17 19:56 (p 2 of 3)
Test Code: 49822704 dd fm | 09-6583-7029

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 08-2770-7642 **Endpoint:** 10-Day Mortality Rate
Analyzed: 14 Dec-17 19:32 **Analysis:** Linear Regression (GLM)

CETIS Version: CETISv1.9.2
Official Results: Yes

10-Day Mortality Rate Summary**Calculated Variate(A/B)**

Conc-ug/bee/day	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
53		3	0.0167	0.0000	0.0500	0.0167	0.0289	173.20%	0.0%	1	60
89		3	0.0667	0.0500	0.1000	0.0167	0.0289	43.30%	5.09%	4	60
164		3	0.3000	0.1500	0.4500	0.0866	0.1500	50.00%	28.81%	18	60
359		3	0.8333	0.7000	0.9500	0.0727	0.1258	15.10%	83.05%	50	60
1248		3	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	100.0%	60	60

10-Day Mortality Rate Detail

Conc-ug/bee/day	Code	Rep 1	Rep 2	Rep 3
53		0.0000	0.0500	0.0000
89		0.1000	0.0500	0.0500
164		0.3000	0.4500	0.1500
359		0.8500	0.7000	0.9500
1248		1.0000	1.0000	1.0000

10-Day Mortality Rate Binomials

Conc-ug/bee/day	Code	Rep 1	Rep 2	Rep 3
53		0/20	1/20	0/20
89		2/20	1/20	1/20
164		6/20	9/20	3/20
359		17/20	14/20	19/20
1248		20/20	20/20	20/20

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

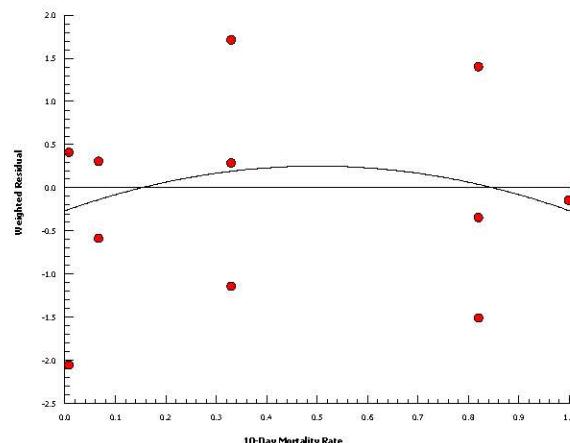
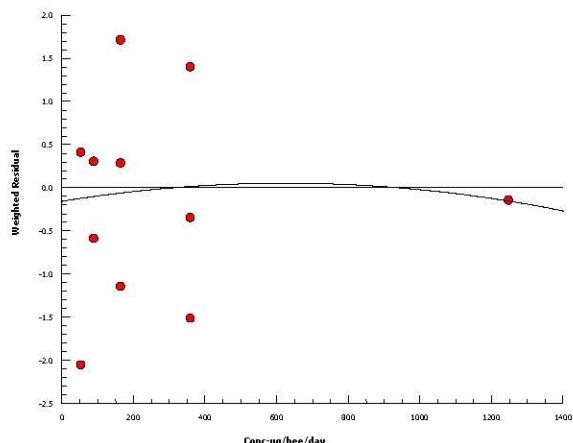
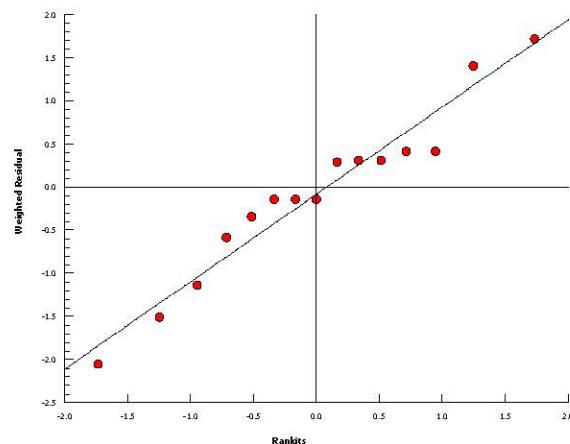
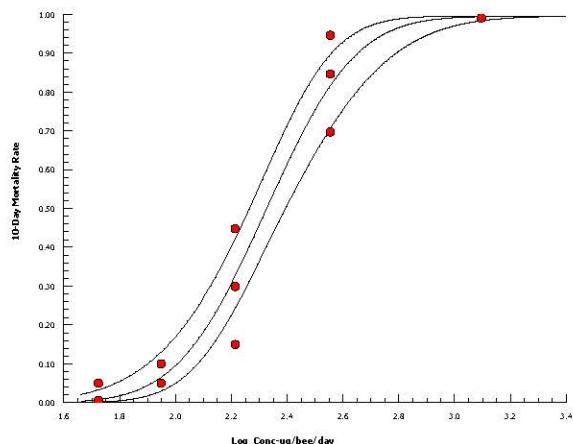
BioChem Agrar

Analysis ID: 08-2770-7642
 Analyzed: 14 Dec-17 19:32

Endpoint: 10-Day Mortality Rate
 Analysis: Linear Regression (GLM)

CETIS Version: CETISv1.9.2
 Official Results: Yes

Graphics

Log-Normal: $\text{inv } \Phi[\pi] = \alpha + \beta \cdot \log[x]$ 

CETIS Analytical Report

Report Date: 14 Dec-17 19:57 (p 1 of 2)
Test Code: 49822704 dd fm | 09-6583-7029

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 03-4216-6440	Endpoint: Food Consumption	CETIS Version: CETISv1.9.2
Analyzed: 14 Dec-17 19:31	Analysis: Nonlinear Regression (NLR)	Official Results: Yes
Batch ID: 11-4710-5888	Test Type: 2014 Honeybee Adult Chron Oral	Analyst:
Start Date: 11 Sep-13	Protocol: Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent: 50% w/v sucrose solution
Ending Date: 21 Sep-13	Species: Apis mellifera	Brine:
Duration: 10d 0h	Source: Bienenfarm Kern	Age:
Sample ID: 16-5722-9681	Code: 49822704	Client: CDM Smith - E. Krupka
Sample Date: 11 Sep-13	Material: Mesotrione	Project: Herbicide
Receipt Date: 01 Dec-17 00:32	Source: Syngenta	
Sample Age: n/a	Station:	

Comments:

'10-Day Mortality Rate' endpoint...

There are a total of 3 tied group(s) detected. CETIS applied a tie correction to the asymptotic normal approximation in cases where ties occurred across groups. Since Monte Carlo simulations can also effectively address ties, it is suggested that you re-analyze the data with Monte Carlo.
PC Code 122990 MRID 49822704 dietary dose formulation

Non-Linear Regression Options

Model Name and Function		Weighting Function		PTBS Function		X Trans	Y Trans
3P Cum Log-Normal (Probit): $\mu=\alpha \cdot [1 - \Phi[\log(x/\delta)/\gamma]]$		Normal [$\omega=1$]		Off [$\mu^*=\mu$]		None	None

Regression Summary

Iters	Log LL	AICc	BIC	Adj R2	Optimize	F Stat	Critical	P-Value	Decision($\alpha:5\%$)
23	-45.79	99.3	100.3		Yes	3.684	3.49	0.0434	Significant Lack of Fit

Point Estimates

Level	ug/bee/da	95% LCL	95% UCL
EC5	2.034E-14	n/a	n/a
EC10	0.0000000	n/a	n/a
EC15	0.0000117	n/a	n/a
EC20	0.007544	n/a	n/a
EC25	1.927	n/a	n/a
EC40	2242000	n/a	n/a
EC50	99920000	n/a	n/a
EC90	2.872E+28	n/a	n/a

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision($\alpha:5\%$)
α	36.4	7.825	19.72	53.08	4.651	3.1E-04	Significant Parameter
γ	33.16	274	-550.9	617.3	0.121	0.9053	Non-Significant Parameter
δ	9.99E+09	1.46E+12	-3.1E+12	3.13E+12	0.006837	0.9946	Non-Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)
Model	14070	4689	3	25.52	3.8E-06	Significant
Lack of Fit	1321	440.4	3	3.684	0.0434	Significant
Pure Error	1435	119.5	12			
Residual	2756	183.7	15			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision($\alpha:5\%$)
Variances	Mod Levene Equality of Variance	3.576	4.387	0.0762	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.6716	0.8965	3.8E-05	Non-Normal Distribution
	Anderson-Darling A2 Normality Te	2.157	2.492	<1.0E-37	Non-Normal Distribution

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study

BioChem Agrar

Analysis ID: 03-4216-6440 Endpoint: Food Consumption
 Analyzed: 14 Dec-17 19:31 Analysis: Nonlinear Regression (NLR)

CETIS Version: CETISv1.9.2
 Official Results: Yes

Food Consumption Summary

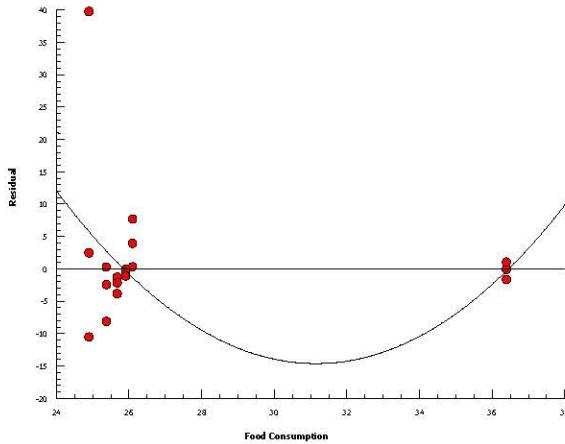
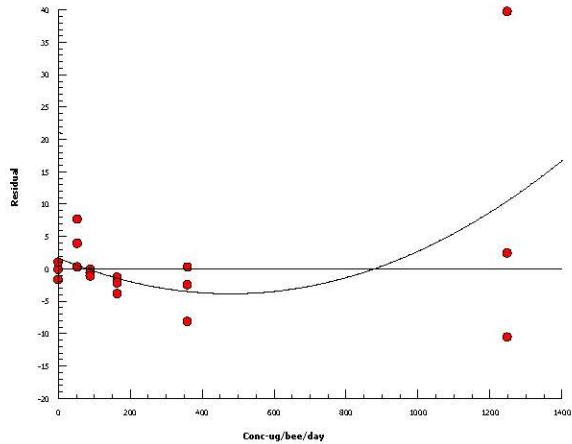
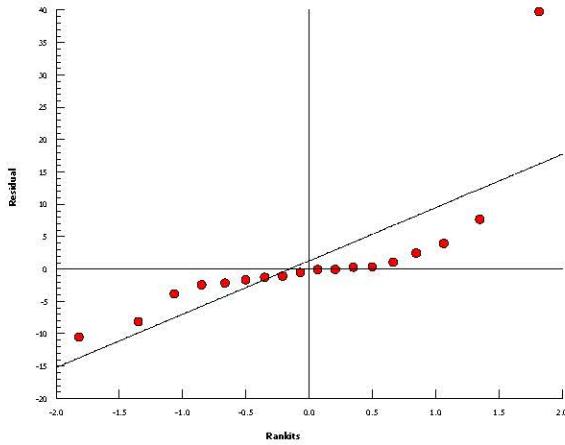
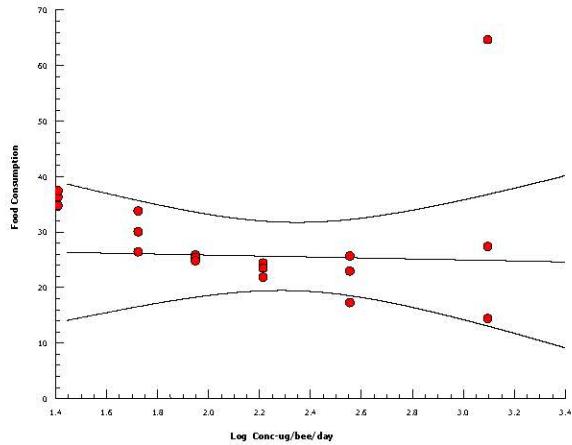
Calculated Variate

Conc-ug/bee/day	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	3	36.15	34.71	37.43	0.7889	1.366	3.78%	0.0%
53		3	30.06	26.4	33.76	2.125	3.68	12.24%	16.83%
89		3	25.32	24.78	25.83	0.3035	0.5256	2.08%	29.95%
164		3	23.23	21.83	24.38	0.7472	1.294	5.57%	35.72%
359		3	21.93	17.23	25.64	2.477	4.29	19.56%	39.33%
1248		3	35.45	14.37	64.65	15.07	26.11	73.64%	1.93%

Food Consumption Detail

Conc-ug/bee/day	Code	Rep 1	Rep 2	Rep 3
0	N	36.3	37.43	34.71
53		26.4	30.03	33.76
89		25.83	25.35	24.78
164		24.38	23.49	21.83
359		17.23	22.92	25.64
1248		64.65	14.37	27.33

Graphics

Model: 3P Cum Log-Normal (Probit): $\mu = \alpha [1 - \Phi[\log[x/\delta]/\gamma]]$ Distribution: Normal [$\omega=1$]

CETIS Analytical Report

Report Date: 14 Dec-17 19:57 (p 1 of 2)
Test Code: 49822704 dd fm | 09-6583-7029

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 12-4901-2922	Endpoint: 10-Day Mortality Rate	CETIS Version: CETISv1.9.2
Analyzed: 14 Dec-17 19:32	Analysis: Trimmed Spearman-Kärber	Official Results: Yes
Batch ID: 11-4710-5888	Test Type: 2014 Honeybee Adult Chron Oral	Analyst:
Start Date: 11 Sep-13	Protocol: Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent: 50% w/v sucrose solution
Ending Date: 21 Sep-13	Species: Apis mellifera	Brine:
Duration: 10d 0h	Source: Bienenfarm Kern	Age:
Sample ID: 16-5722-9681	Code: 49822704	Client: CDM Smith - E. Krupka
Sample Date: 11 Sep-13	Material: Mesotrione	Project: Herbicide
Receipt Date: 01 Dec-17 00:32	Source: Syngenta	
Sample Age: n/a	Station:	

Comments:

'10-Day Mortality Rate' endpoint...

There are a total of 3 tied group(s) detected. CETIS applied a tie correction to the asymptotic normal approximation in cases where ties occurred across groups. Since Monte Carlo simulations can also effectively address ties, it is suggested that you re-analyze the data with Monte Carlo.
PC Code 122990 MRID 49822704 dietary dose formulation

Trimmed Spearman-Kärber Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	EC50	95% LCL	95% UCL
Control Threshold	0	1.67%	2.348	0.02982	222.7	194.1	255.5

10-Day Mortality Rate Summary**Calculated Variate(A/B)**

Conc-ug/bee/day	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	N	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0%	0	60	
53		3	0.0167	0.0000	0.0500	0.0167	0.0289	173.20%	1.67%	1	60
89		3	0.0667	0.0500	0.1000	0.0167	0.0289	43.30%	6.67%	4	60
164		3	0.3000	0.1500	0.4500	0.0866	0.1500	50.00%	30.0%	18	60
359		3	0.8333	0.7000	0.9500	0.0727	0.1258	15.10%	83.33%	50	60
1248		3	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	100.0%	60	60

10-Day Mortality Rate Detail

Conc-ug/bee/day	Code	Rep 1	Rep 2	Rep 3
0	N	0.0000	0.0000	0.0000
53		0.0000	0.0500	0.0000
89		0.1000	0.0500	0.0500
164		0.3000	0.4500	0.1500
359		0.8500	0.7000	0.9500
1248		1.0000	1.0000	1.0000

10-Day Mortality Rate Binomials

Conc-ug/bee/day	Code	Rep 1	Rep 2	Rep 3
0	N	0/20	0/20	0/20
53		0/20	1/20	0/20
89		2/20	1/20	1/20
164		6/20	9/20	3/20
359		17/20	14/20	19/20
1248		20/20	20/20	20/20

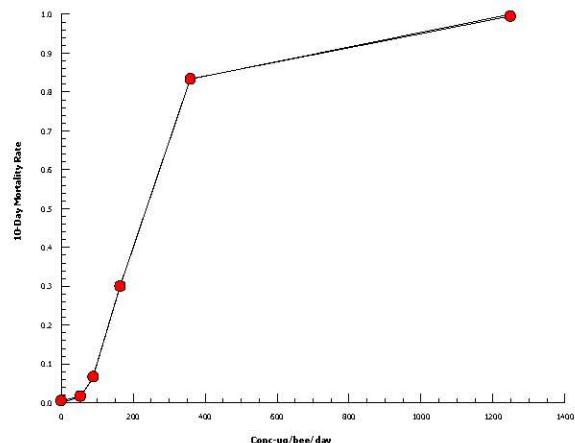
CETIS Analytical Report

Report Date: 14 Dec-17 19:57 (p 2 of 2)
Test Code: 49822704 dd fm | 09-6583-7029

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Analysis ID: 12-4901-2922 Endpoint: 10-Day Mortality Rate
Analyzed: 14 Dec-17 19:32 Analysis: Trimmed Spearman-Kärber

CETIS Version: CETISv1.9.2
Official Results: Yes

Graphics

CETIS Summary Report

Report Date: 14 Dec-17 19:57 (p 1 of 2)
Test Code: 49822704 dd fm | 09-6583-7029

Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study**BioChem Agrar**

Batch ID:	11-4710-5888	Test Type:	2014 Honeybee Adult Chron Oral	Analyst:	
Start Date:	11 Sep-13	Protocol:	Honeybee Adult Chronic Oral Toxicity, 10-d	Diluent:	50% w/v sucrose solution
Ending Date:	21 Sep-13	Species:	Apis mellifera	Brine:	
Duration:	10d 0h	Source:	Bienenfarm Kern	Age:	
Sample ID:	16-5722-9681	Code:	49822704	Client:	CDM Smith - E. Krupka
Sample Date:	11 Sep-13	Material:	Mesotrione	Project:	Herbicide
Receipt Date:	01 Dec-17 00:32	Source:	Syngenta		
Sample Age:	n/a	Station:			

Comments:

'10-Day Mortality Rate' endpoint...

There are a total of 3 tied group(s) detected. CETIS applied a tie correction to the asymptotic normal approximation in cases where ties occurred across groups. Since Monte Carlo simulations can also effectively address ties, it is suggested that you re-analyze the data with Monte Carlo.

PC Code 122990 MRID 49822704 dietary dose formulation

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	ug/bee/da	95% LCL	95% UCL	TU	✓
08-2770-7642	10-Day Mortality Rate	Regression: Log-Normal (Probit)	EC5	81.76	63.6	97.8		
			EC10	100.9	82	117.6		
			EC15	116.2	97.03	133.6		
			EC20	130	110.6	148.2		
			EC25	143.2	123.5	162.4		
			EC40	182.7	161	207.2	✓	
			EC50	211.5	186.9	242.4	✓	
12-4901-2922	10-Day Mortality Rate	Trimmed Spearman-Kärber	EC50	222.7	194.1	255.5		
03-4216-6440	Food Consumption	Regression: 3P Cum Log-Normal (Probit)	EC5	2.034E-14	n/a	n/a	✓	
			EC10	0.0000000	n/a	n/a	✓	
			EC15	0.0000117	n/a	n/a	✓	
			EC20	0.007544	n/a	n/a	✓	
			EC25	1.927	n/a	n/a	✓	
			EC40	2242000	n/a	n/a		
			EC50	99920000	n/a	n/a		
			EC90	2.872E+28	n/a	n/a		

10-Day Mortality Rate Summary

Conc-ug/bee/day	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00%
53		3	0.0167	0.0000	0.0884	0.0000	0.0500	0.0167	0.0289	173.21%	1.67%
89		3	0.0667	0.0000	0.1384	0.0500	0.1000	0.0167	0.0289	43.30%	6.67%
164		3	0.3000	0.0000	0.6726	0.1500	0.4500	0.0866	0.1500	50.00%	30.00%
359		3	0.8333	0.5208	1.0000	0.7000	0.9500	0.0727	0.1258	15.10%	83.33%
1248		3	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	100.00%

Food Consumption Summary

Conc-ug/bee/day	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	3	36.15	32.75	39.54	34.71	37.43	0.7889	1.366	3.78%	0.00%
53		3	30.06	20.92	39.21	26.4	33.76	2.125	3.68	12.24%	16.83%
89		3	25.32	24.01	26.63	24.78	25.83	0.3035	0.5256	2.08%	29.95%
164		3	23.23	20.02	26.45	21.83	24.38	0.7472	1.294	5.57%	35.72%
359		3	21.93	11.27	32.59	17.23	25.64	2.477	4.29	19.56%	39.33%
1248		3	35.45	-29.4	100.3	14.37	64.65	15.07	26.11	73.64%	1.93%

CETIS Summary ReportReport Date: 14 Dec-17 19:57 (p 2 of 2)
Test Code: 49822704 dd fm | 09-6583-7029**Special Study Honey bee Adult Chronic Oral Toxicity, 10-day Study****BioChem Agrar****10-Day Mortality Rate Detail**

Conc-ug/bee/day	Code	Rep 1	Rep 2	Rep 3
0	N	0.0000	0.0000	0.0000
53		0.0000	0.0500	0.0000
89		0.1000	0.0500	0.0500
164		0.3000	0.4500	0.1500
359		0.8500	0.7000	0.9500
1248		1.0000	1.0000	1.0000

Food Consumption Detail

Conc-ug/bee/day	Code	Rep 1	Rep 2	Rep 3
0	N	36.3	37.43	34.71
53		26.4	30.03	33.76
89		25.83	25.35	24.78
164		24.38	23.49	21.83
359		17.23	22.92	25.64
1248		64.65	14.37	27.33